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## ECONOMIC INTELLIGENCE REPORT

# THE SOVIET ECONOMY IN 1955 AND PLANS FOR 1956-61



CIA/RR 78

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ECONOMIC INTELLIGENCE REPORT

THE SOVIET ECONOMY IN 1955 AND PLANS FOR 1956-61

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(ORR Project 14.845)

CENTRAL INTELLIGENCE AGENCY  
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S-E-C-R-E-T

S-E-C-R-E-T

CONTENTS

	<u>Page</u>
Summary and Conclusions . . . . .	1
I. Introduction: Economic Policy in 1955 and Plans for 1956-61 . . . . .	5
II. Size and Growth of the Soviet Economy . . . . .	15
A. Comparison Between the US and the USSR, 1955 . . . . .	15
1. Allocation of Resources . . . . .	15
2. Dollar Comparisons of GNP and Its Components . . . . .	16
B. Changes in Rate of Growth and Composition of GNP . . . . .	16
C. Comparisons of Economic Growth . . . . .	20
III. Soviet Industrial Production . . . . .	23
A. Trends in Industrial Growth . . . . .	23
B. Patterns of Sector Growth . . . . .	25
1. Energy . . . . .	25
2. Metallurgy and Industrial Materials . . . . .	29
3. Machinery and Equipment . . . . .	31
4. Durable Consumer Goods . . . . .	32
C. Industrial Labor Force . . . . .	32
D. Expansion in the East . . . . .	33
E. Technology in Industry . . . . .	36
1. General . . . . .	36
2. Electric Power . . . . .	37
3. Coal . . . . .	38
4. Chemicals . . . . .	39
5. Ferrous Metals . . . . .	39
6. Metalworking Machinery . . . . .	40
F. Transport . . . . .	41

S-E-C-R-E-T

	<u>Page</u>
IV. Agricultural Production and Policies . . . . .	45
A. Performance in 1955 and Estimated Production in 1956-61 . . . . .	45
B. Problems and Policies in Agricultural Growth . . . . .	48
1. Natural Resources . . . . .	48
2. Investment Policy . . . . .	49
3. Organizational Measures . . . . .	50
V. Soviet Consumption and the Standard of Living . . . . .	55
A. Role of Consumption in the Economy . . . . .	55
B. Aggregate Consumption . . . . .	56
C. Trends in the Consumption of Goods . . . . .	57
D. Trends in the Consumption of Services . . . . .	58
E. Significance of the Standard of Living (Per Capita Consumption) . . . . .	58
F. Evaluation of the Standard of Living . . . . .	58
G. Distribution of Income . . . . .	60
H. Real Wages and Incomes . . . . .	61
VI. Soviet Foreign Economic Relations . . . . .	63
A. General . . . . .	63
B. Soviet - European Satellite Trade . . . . .	63
C. Soviet - Communist Far East Trade . . . . .	66
D. Soviet - Free World Trade . . . . .	67
E. Sino-Soviet Bloc Credit Program in the Free World . . . . .	70
F. Role of the USSR in the Sino-Soviet Bloc Credit Program . . . . .	71
G. Recipient Countries Under the Sino-Soviet Bloc Credit Program . . . . .	73
H. Economic Basis of Credit Program . . . . .	74

Appendixes

Appendix A. Statistical Tables . . . . .	77
--	----

S-E-C-R-E-T

	<u>Page</u>	
Appendix B. Methodology . . . . .	89	50X1



Tables

1. Comparison of Expenditures of the Planned Total Soviet Budget and for the Categories of Defense and Financing the National Economy, 1954-56 . . . . .	9
2. Soviet Capital Investment, 1954-56 . . . . .	12
3. Soviet Gross National Product, by End Use, Selected Years, 1948-61 . . . . .	17
4. Soviet Gross National Product, by Sector of Origin, Selected Years, 1950-61 . . . . .	19
5. Comparison of Gross National Products of the USSR and the US, Selected Years, 1948-61 . . . . .	21
6. Comparison of Gross National Products of the West and the Sino-Soviet Bloc, Selected Years, 1948-61 . . . . .	22
7. Estimated Soviet Production Indexes for the Fifth and Sixth Five Year Plans . . . . .	27
8. Soviet Goals for Production of Nonferrous Metals, 1955 and 1960 . . . . .	30
9. Indexes of Ton-Kilometers and Industrial Production in the USSR, 1951-55 and 1956-60 . . . . .	42
10. Estimated Production of Selected Agricultural Commodities in the USSR, 1950, 1955, 1960, and 1961 . . . . .	47
11. Soviet Consumption Related to Gross National Product, 1948, 1950, and 1955 . . . . .	56

- v -

S-E-C-R-E-T

S-E-C-R-E-T

	<u>Page</u>
12. Soviet Consumption Indexes, Selected Years, 1948-61 . . .	57
13. Indexes of Soviet Population, Aggregate Consumption, and Per Capita Consumption, Selected Years, 1950-61 . .	59
14. Indexes of Standards of Living in the US and the USSR, 1948-55 . . . . .	61
15. Foreign Trade of the USSR, 1948-55 . . . . .	64
16. Soviet Trade with the Free World, 1952-55 . . . . .	68
17. Commodity Composition of Soviet - Free World Trade, 1952-55 . . . . .	69
18. Minimum Known Credits and Possible Credits to Be Extended by the Sino-Soviet Bloc to Non-Bloc Countries, 1 January 1954 - 1 April 1956 . . . . .	72
19. USSR: Indexes of Gross National Product, by Sector, 1950-56, 1960, and 1961 . . . . .	77
20. USSR: Estimates of Production of Selected Products of Heavy and Light Industry, 1950-56, 1960, and 1961 . . .	81
21. US and USSR: Comparison of Production of Selected Industrial Products, 1948 and 1955 . . . . .	83
22. USSR: Estimates of Production of Selected Food and Industrial Crops, 1938, 1950-56, 1960, and 1961 . . . .	85
23. USSR: Estimates of Consumption of Selected Goods and Services, 1950-56, 1960, and 1961 . . . . .	86
24. USSR: Estimates of Production for Transport and Communications, 1950-56, 1960, and 1961 . . . . .	88

S-E-C-R-E-T

Following Page

Illustrations

Figure 1.	Comparison of US and Soviet Gross National Products, by End Use, 1955 (Chart) . . . . .	16
Figure 2.	Comparison of US Average 1952-54 and Soviet 1955 Gross National Products, by Sector of Origin (Chart) . . . . .	16
Figure 3.	USSR: Planned Major Industrial Development in Kazakhstan and Siberia, 1956-60 (Map) . . . . .	34

- vii -

S-E-C-R-E-T



CIA/RR 78  
(ORR Project 14.845)

S-E-C-R-E-T

THE SOVIET ECONOMY IN 1955 AND PLANS FOR 1956-61\*

Summary and Conclusions

At the beginning of the Sixth Five Year Plan (1956-60) the economy of the USSR is strong, with excellent prospects of growth. The Soviet goal is clearly evident: a maximum rate of growth of heavy industry, which will strengthen the Soviet military position, increase its international prestige, and enable it to penetrate underdeveloped economies with capital exports. The USSR seeks ultimately to surpass the US, first in heavy industrial production, later in all other sectors. Under this policy, other sectors of the economy will be expanded to the extent necessary to promote the growth of heavy industry.

The gross national product (GNP) of the Soviet economy in 1955 is estimated at about 38 percent of the GNP of the US. An average annual growth rate of 6.9 percent during 1956-61, nearly double the rate expected for the US economy, will raise this percentage to 45 percent in the final year. Because of the much greater magnitude of the US economy, however, the absolute difference in size between the two economies will widen -- from US \$241 billion\*\* in 1955 to \$266 billion in 1961. The absolute gap between the economies will reach its widest point during 1965-70 and will thereafter decrease. Approximately the same relationships obtain between the US and the NATO countries, on the one hand, and the Sino-Soviet Bloc, on the other.

This estimated growth rate is nearly the same as that achieved during the Fifth Five Year Plan (1951-55), when Soviet GNP rose from 32 to 38 percent of US GNP. Such a rapid rate of increase will be maintained by a rise in the already high rate of capital investment, increases in the labor force, heavy allocations of both these resources to industry, and further improvements in managerial and technical efficiency. The annual volume of investment will grow by nearly two-thirds during the Sixth Five Year Plan, and its share in total GNP will rise from nearly 24 percent in 1955 to over 28 percent

\* The estimates and conclusions contained in this report represent the best judgment of ORR as of 15 June 1956.

\*\* All dollar values in this report are given in US dollars.

S-E-C-R-E-T

S-E-C-R-E-T

in 1961. By contrast, the US devoted 18.4 percent of its total output to investment in 1955.

The Soviet economy is now large enough to bear an investment burden of this size and at the same time accomplish other objectives. Thus consumption, although it will constitute a declining share of total output, will nevertheless rise by 34 percent during the Sixth Five Year Plan, slightly slower than in the preceding 5 years but still rapidly enough to provide a per capita gain of about 4.5 percent per year. The economy's large size and rapid growth will at the same time sustain a 29-percent increase in defense outlays, currently estimated to be almost as large as US defense expenditures.

Large investments, above-plan allocations of workers, and managerial and technical advances supported an 82-percent increase during the Fifth Five Year Plan in the output of heavy industry, which considerably exceeded its target. This feat, accomplished simultaneously with a rise in living standards and a significant strengthening of military capabilities, brought Soviet heavy industrial production from about 25 percent of US production in 1950 to about 35 percent in 1955. During the Sixth Five Year Plan a further gain of 70 percent will raise the USSR-US ratio to about 45 percent, if US industry follows its 1950-55 trend. As in the two previous Five Year Plans, heavy industry in 1956-60 will receive 60 percent of total state investment -- nine times as much as light industry.

Because of the phenomenal past growth in the production of capital equipment, an increased share of this investment can take the form of new and more productive machinery as opposed to construction, enabling the USSR for the first time to replace obsolescent equipment on a considerable scale. A contributory reason for the stress on technical advance rather than the building of new plants may be the chronic underfulfillment of previous plan goals by the construction industry. Another reason is the lower rate of growth of the industrial labor force and the shorter workweek planned for the Sixth Five Year Plan period. Affected by the lowered wartime birth rate and the cessation since 1953 of the traditional flow of labor from agriculture into industry, the industrial labor force will grow by only 16 to 20 percent during the Sixth Five Year Plan compared with 23 percent in the Fifth, even after allowing for the transfer of an estimated 1 million to 2 million men to the industrial labor force from the armed forces and from the nonindustrial labor force. The lower rate of growth of the industrial labor force, combined with a planned reduction in the

- 2 -

S-E-C-R-E-T

S-E-C-R-E-T

workweek from 48 to 42 hours by 1960, increases the importance of raising productivity per man-hour. Considerable new construction will be required, however, in the less developed regions of Siberia and Kazakhstan, where a major building and transportation program is projected to form the basis for industrial growth in the decades ahead.

Agriculture remains the weak spot of the Soviet economy, the sector exerting the greatest constraint on the general economic development necessary to the further growth of heavy industry. The most enduring element of the innovations introduced by Stalin's successors has been the recognition that the late dictator's policies had been acting to aggravate rather than to eliminate this constraining effect. Over the next 5 years, agriculture will support industrial growth with a greater supply of quality foods and fibers. In the ensuing period, it is expected to resume its role as a source of additional industrial workers, but for the immediate future the agricultural labor force will be maintained in numbers, improved in skills, and given higher income incentives. It will be provided with increased investments, as in 1954-55, and set to work on a new production pattern. Last, it will be subjected to closer Party control.

At the core of the agricultural program are the "new lands" and corn projects. In combination, these schemes seek to maintain adequate bread supplies while rapidly increasing fodder output in order to support ambitious goals for livestock products. In spite of climatic risks, livestock products are accorded a chance for considerable success, and it is estimated that agricultural output will grow about twice as fast during the Sixth Five Year Plan as it did during the Fifth. Although the official targets are too high, production of meat, milk, vegetables, cotton, and wool is expected to increase substantially faster than the rise in population, and bread and potato supplies will remain adequate. One major doubtful factor is political: several recent moves indicate that the Party leadership, like Stalin, is determined to carry forward to completion the collectivization of agriculture by further restricting or eliminating private plots and livestock holdings. In the past, such moves have aroused peasant resentment and provoked a decline in production.

The Soviet consumer received considerable gains during the Fifth Five Year Plan, but the increase in living standards slowed down in 1955. In that year, policy shifted away from efforts to raise worker

- 3 -

S-E-C-R-E-T

S-E-C-R-E-T

morale through greater material incentives and stressed other methods of raising labor productivity. Relative gains during the Sixth Five Year Plan will be somewhat below those of the Fifth, but a number of quality products will become available to a wider circle of consumers. The effort to bring rural living standards closer to those prevailing in the towns will continue over the next 5 years.

By 1960 the level of consumption in the USSR will still be low by Western standards. Nevertheless, this level probably will not be a cause of serious dissatisfaction to the Soviet citizen, who will continue to experience steady annual increases in his living standard. Neither will it necessarily appear as a mark against the Soviet system in the eyes of Asians, Middle Easterners, and Africans accustomed to much lower per capita levels of material well-being.

In its foreign economic relations the USSR, as the leader of the Sino-Soviet Bloc, will continue over the next 5 years to press its campaign to become a major source of economic assistance to underdeveloped countries. The policy of supplying capital equipment and technical aid to such countries under attractive payment terms promises economic as well as political gains. Nearly three decades of rapid development have so altered the structure of the Soviet economy that the exchange of domestic manufactured goods for foreign foodstuffs and raw materials is now more economically advantageous than the pattern which characterized Soviet foreign trade in earlier Five Year Plans. In the future the USSR, in company with other members of the Sino-Soviet Bloc, can exploit the opportunities for penetrating foreign economies, and increasing its political influence correspondingly, to a much greater extent than at present, not only without impairing its internal economic programs but also with some net economic gain, especially through imports of foodstuffs and raw materials.

The Soviet leadership since the death of Stalin has made significant progress in solving the two most pressing problems threatening the future growth of heavy industry -- the lag in agricultural production and the slowdown in the growth of labor productivity. Further successes are expected in both areas during the next 5 years, but the problems will remain. As the goal of overtaking the US will also remain unrealized, the broad economic policies outlined in the Sixth Five Year Plan probably will be projected into the Seventh and beyond.

S-E-C-R-E-T

S-E-C-R-E-T

I. Introduction: Economic Policy in 1955 and Plans for 1956-61.

Soviet economic policy since 1928 has steadfastly sought to maximize the output of heavy industry. All economic activity in heavy industry and all other sectors of the economy is geared to this task, which is regarded as necessary to provide military strength, to assist the Soviet foreign policy by enhancing its international prestige, and to engage in economic competition with capitalist nations.

Basically, Stalin's successors have introduced no change in economic policy. They have had, however, to make decisions about the most effective means of pursuing the goal of increased output. Similarly, they have had to concern themselves with problems of timing -- for example, whether future growth will be best obtained by greater current attention to consumption or investment or whether current allocations to defense should be restricted for the sake of agriculture. The selection of one set of alternatives from among the possible courses of action usually does not alter radically the Soviet pattern of growth but rather involves only marginal changes in the allocation of economic resources among competing uses.

Economic policy in 1953-54 was characterized by two innovations. First, the need to overcome agricultural stagnation in order to permit continued growth of heavy industry was recognized. Second, a more productive use of labor, rather than mere numerical additions of workers, was accorded a central place in growth plans. The approach to these problems in 1955 retained some of the measures introduced during the new course of action which followed Stalin's death, but significant new features were added and some elements of the previous program were dropped.

The 1955 budget reflected these decisions early in the year. It was drawn up within the limits imposed by a 12-percent increase in defense expenditures, caused primarily by a rise in expenditures for aircraft procurement which in turn reflected the fruition of earlier developmental programs. Under these circumstances the commitment of resources to agriculture, which had risen sharply in 1954, was maintained.\* But the effort to raise labor productivity, which formerly had been embodied in an attempt to raise incentives by means of a higher level of consumption, was altered. Perhaps because this approach had not produced satisfactory results, perhaps because it could not

<sup>11</sup>  
\* Agricultural policy is discussed in detail in IV, below.

S-E-C-R-E-T

be continued without cutting too deeply into other important programs, the promises of an immediate and rapid rise in the output of consumer goods were revoked. The allocation to light industry was cut by 16 percent, and whereas the plan for investments in the same sector was hidden in censorship, actual investments can be readily estimated at 40 percent less than in 1954. Simultaneously, fiscal measures were taken to adjust the population's income more closely to the available supply of goods; the annual retail price cut was foregone for the first time in 8 years, and compulsory state loan subscriptions were doubled. Budgetary allocations to heavy industry rose, its primacy was reaffirmed in strident tones, and its planned growth rate was set well above that provided for light industry.

As the year progressed it became evident that the Party, in rejecting the alternative of a rapid increase in the level of consumption, had not lost sight of the labor productivity problem. Its efforts in 1955 went primarily into measures designed to equip workers with better machinery and to improve methods of industrial organization and planning rather than to raise workers' morale with more consumer goods. This program was summarized in Bulganin's July speech to the plenum of the Central Committee. He called for a sharp rise in the pace of technical improvement in industry to be based in part on a new and positive attitude toward the adoption of foreign achievements and in part on the introduction of new managerial incentives for modernization. Bulganin outlined a program of plant specialization to correct deficiencies in the industrial structure which had been created over the past two decades of hasty industrialization, war, and postwar reconstruction. He stressed the need for a revision of the outmoded work norms and wage scales, which no longer stimulated productivity and the acquisition of skills. Last, he ordered improvements in management through further transfers of decision-making powers to echelons closer to the production level and better economic direction by means of a separation of long- and short-term planning.

Both before and after Bulganin's speech, administrative measures were taken to implement these reforms. In May 1955, short- and long-term planning were in fact separated and assigned to two distinct bodies. Also in May, two new special-problem committees were created -- one concerned with labor and wage problems and the other with the introduction of new technology. The appointment of Kaganovich to head the Committee on Labor and Wages indicated the high priority attached

- 6 -

S-E-C-R-E-T

S-E-C-R-E-T

to the former problem, and the Committee on New Technology, headed by Malyshev, was buttressed by the appointment of deputy ministers for technology in each production ministry.

The policy of 1953-54 which resulted in an increase in the powers of lower level managers was continued in 1955. In the earlier period, important ministries in metallurgy and fuels were changed from All-Union to union-republic status, many small enterprises in other fields were placed under republic jurisdiction, economic reporting requirements were relaxed, the list of centrally allocated items was reduced, the enterprise plan was shortened, and managerial powers to vary labor distribution were granted. Suggestions for further moves in these directions continued to be made in the Soviet press in 1955, although difficulty was encountered in persuading managers to exercise even the initiatives extended in previous years, and intermediate officials at the ministerial level continued to cling to their "petty" tutelage over enterprise managers. The Party Central Committee adopted a resolution in July 1955 calling for an extension of the rights of enterprise directors. Shortly thereafter, their powers were broadened considerably, and it was announced that a new statute was being prepared to define in greater detail the status of the individual enterprise and the rights of the director. 1/\*

Additional ministries were converted from All-Union to union-republic status in 1955 and early 1956 and ministerial splitting was continued in an effort to bring undivided attention to bear on the problems of single industries. Bulganin's XXth Party Congress speech in February 1956 resumed this theme, this time concentrating heavily on the delegation of authority to the national minority republics. It can be surmised that the desire to destroy managerial habits of dependence on Moscow contributed in some part to the necessity for exploding the Stalin myth. Throughout this period, however, there has been no diminution in the responsibility of the Party member to check upon managerial decisions and assure plan fulfillment.

One of the most significant features of Soviet economic policy in 1955 was the sharp acceleration, in the second half of the year, in the trend of recent years to a more aggressive foreign trade policy. Soviet development during five Five Year Plans has made it economically advantageous to exchange capital goods for agricultural products and raw materials at a time when a number of underdeveloped and politically

50X1

- 7 -

S-E-C-R-E-T

S-E-C-R-E-T

uncommitted countries wish to engage in this type of trade. Pursuit of this policy, which promises both political and economic gains to the USSR, has taken the form of Soviet Bloc offers of more than \$1 billion in long-term credits at low interest rates. Communist China and the European Satellites have been enlisted in the credit drive, which reached a total of approximately \$800 million in accepted offers during the period 1954 through February 1956. Soviet industrial growth will be adequate to continue this trend through the Sixth Five Year Plan, in which event the USSR may emerge as a net exporter of capital goods to non-Bloc countries -- a position which would materially enhance its prestige in the struggle to influence the political alignment of economically underdeveloped countries.

The economic program of 1955 was successful. Industrial labor productivity grew at a slightly faster rate than in 1954. Industrial output increased by a reported 12 percent, carrying production well over the target of the Fifth Five Year Plan. Production of heavy industry was announced to be 91 percent above the 1950 figure as opposed to an original target of 84 percent, and targets for steel, oil, and electric power, though not for coal and pig iron, were surpassed. The expansion of sown area resulted in a relatively good agricultural year, although production fell far short of the original targets. The year 1955 was a poor one only for the consumer. In contrast to many major producer goods, the rates of increase in the production of nearly all of the important foodstuffs and manufactured consumer goods were either less than, or at best equal to, the 1954 rates of increase. State and cooperative retail trade, which had been boosted in 1953-54 by imports and reduction of reserves and inventories, grew by only 5 percent as against increases of 21 and 18 percent in 1953 and 1954, respectively. And except for the last quarter of the year, when the effects of the current harvest were felt, prices on the free market, which supplements state food supplies in the cities, were higher than in the previous year for the first time during the postwar period.

Publication in the winter of 1955-56 of the 1956 budget and the Sixth Five Year Plan provided a clear outline of future policy. A comparison of the 1955 and 1956 budgets, if the former is expressed in terms of the lower level of wholesale prices and freight rates introduced on 1 July 1955, reveals that emphasis on heavy industry is strongly reasserted in the 1956 budget (see Table 1\*). Allocations

\* Table 1 follows on p. 9.



S-E-C-R-E-T

Table 1

Comparison of Expenditures of the Planned Total Soviet Budget  
and for the Categories of Defense and Financing the National Economy  
1954-56

	Billion Rubles			
	<u>1954 a/</u>	<u>Original 1955 b/</u>	<u>Adjusted 1955 c/</u>	<u>1956 d/</u>
Total Expenditures	562.8	563.5	533.0 e/	569.6
Defense	100.3	112.1	N.A.	102.5
Financing the National Economy	216.4	222.4	217.4	237.3
Industry	92.3	111.8	99.0	110.0
Heavy Industry	79.7	101.2	90.0 e/	100.9
Light Industry	12.6	10.6	9.0 e/	9.1
Agriculture	52.0 e/	55.1	48.1	48.6
Trade	1.6	0.8	0.8	0.6
Transport and Communications	21.5	23.0	19.8	21.8

b. Presented by Finance Minister Zverev in 3 February 1955 budget speech. 3/

c. Adjusted for price changes of 1 July 1955. 4/

e. Sufficient ancillary data available to permit an estimate of order of magnitude.

50X1

50X1

in 1956 to heavy industry and to transport and communications are both about 10 percent above the 1955 level. Allocations to light industry and to agriculture show virtually no change from 1955. A revised defense allocation figure for 1955, corrected for price changes, has not been announced, but it is likely that such a correction applied to that portion of the defense allocation affected by the price reduction, when added to the savings in personnel maintenance costs implied by the announced reduction in the number of military personnel, would show 1956 allocations for defense at approximately the 1955 level

S-E-C-R-E-T

or even slightly higher. This relationship differs sharply from that advanced by Soviet comparisons of the 1955 defense allocation in old prices with the 1956 allocation in new prices, which implies an 8.6-percent reduction in defense outlays in 1956.

The increase in allocations to heavy industry reflects the emphasis of the Sixth Five Year Plan on increased production of basic raw materials and on the re-equipment and expansion of the Soviet industrial base. Furthermore, it is believed that some atomic energy and guided missile expenditures are included in the allocation to heavy industry, and an expansion of these activities would contribute to the increase from 1955 to 1956. A further indication of the disposition of Soviet industrial policy is the maintenance in 1956 of virtually the same allocation to light industry as in 1955. The allocation in both years is well below the peak attained during the "new course" year of 1954.

The budget allocation to agriculture in 1956 is approximately the same as the 1955 allocation adjusted for price changes. Of this allocation, however, the share going to Machine Tractor Stations (MTS's) is increased, primarily at the expense of miscellaneous agricultural expenditures. Reduction in the size of the relatively small miscellaneous category probably reflects curtailment of minor elements of the agricultural program, whereas the main lines of the program continue.

The budget allocation to the Ministry of Defense in 1956 is 8.6 percent lower than the 1955 allocation in old prices. Although the USSR has made much of this apparent decline, it is probable that a comparison in real terms would not show a similar decline. The 1956 (plan) figure of 102.5 billion rubles is not directly comparable with the 1955 (plan) figure of 112.1 billion rubles, for several reasons. First, the mid-1955 industrial price cut may have reduced procurement costs by approximately 5 billion rubles. At the same military personnel strength, this would imply a decrease in procurement of perhaps only 5 billion rubles. Second, if the 640,000-man reduction in the Soviet armed forces was carried out as announced in 1955, it would have decreased personnel costs by about 5 billion rubles, freeing this sum for procurement. The combined effect of the price cut and the announced 1955 force reduction would therefore be about 10 billion rubles, or enough to maintain procurement at approximately the 1955 level. Third, procurement costs will also decline in 1956 as various recently introduced models of military equipment, particularly

S-E-C-R-E-T

aircraft, advance further into quantity production. It is thus possible, in view of all three factors, that the 1956 allocations will finance the procurement of more military end items than the 1955 allocations. A substantial underexpenditure of the planned 1956 allocation of 102.5 billion rubles would occur, however, if the reduction of 1.2 million men in the Soviet armed forces, announced on 14 May 1956, is actually carried out during the year ending 1 May 1957, as scheduled.

Further indications of the course of Soviet economic policy are revealed in the capital investment plans announced in the 1956 budget and the Sixth Five Year Plan. The 1956 plan for capital investment, when corrected for the estimated 14 to 16 percent increase in the purchasing power of the 1956 investment ruble over that used for planning investment costs during the Fifth Five Year Plan period, reveals a continuation of the renewed emphasis on heavy industry which was apparent in the 1955 investment plan, as may be seen in Table 2,\* which shows capital investment for 1954-56. It is estimated that heavy industry's share of total investment in industry, which had been reduced to 86.5 percent in 1954 in deference to the consumer goods program, was raised in 1955 to 93 percent, and light industry's share was reduced from 13.5 percent to 7 percent. In 1956 it is planned that heavy industry will receive 92.5 percent of the total investment in industry -- virtually the same share as in 1955.

The Sixth Five Year Plan, published in January 1956, projects the economic policies of 1955 into the next 5 years virtually without change. Heavy industry retains its predominance over light industry, being scheduled for a 70-percent growth in output compared with 60 percent planned for consumer goods. The planned rate of investment rises. Information on the distribution of investment shows that the same share of total state investment, 65 percent, which was devoted to industry in the Fifth Five Year Plan and the 1956 budget will go into industry during the Sixth Plan as a whole. This will again be divided between heavy and light industry on approximately a 9 to 1 basis.

Pending the achievement of highly ambitious agricultural goals, the problem of labor productivity in industry will continue to be attacked by way of better organization and planning and by the provision of advanced equipment to workers rather than through higher

\* Table 2 follows on p. 12.

S-E-C-R-E-T

Table 2  
Soviet Capital Investment  
1954-56

	Billion 1 July 1950 Rubles <sup>a/</sup>				
	Planned 1954 <sup>b/</sup>	Estimated Actual 1954	Planned 1955 <sup>c/</sup>	Estimated Actual 1955	Planned 1956 <sup>d/</sup>
Heavy Industry	90.0	90.0	93.5	97.2	96.6
Light Industry	14.0	11.8	<sup>e/</sup>	7.2	7.8
Agriculture	21.0	19.0	<sup>e/</sup>	20.6	21.3
Transport and Communi- cations	18.6	18.0	<sup>e/</sup>	19.0	21.5
Residual	25.4	18.2	<sup>e/</sup>	22.0	13.6
Total Investment	<u>169.0</u>	<u>157.0</u>	<u>167.2</u>	<u>166.0</u>	<u>160.8</u>

a. 1956 plan in 1 July 1955 rubles, which are worth 14 to 16 percent more than those of 1 July 1950.

b. <sup>6/</sup>

c. <sup>7/</sup>

d. <sup>8/</sup>

e. Not available.

income incentives. This program will be supported by a change in the composition of industrial investment stressing machinery and equipment more than construction of new plants. Increased leisure resulting from a promised reduction in the workweek will have to substitute in part for gains in real income just as the increase in consumption fell off in 1955 from the rate achieved in 1954, so the consumer will gain at a slower rate in the Sixth Five Year Plan than during the Fifth.

Agriculture over the next 5 years will retain the elevated status which it acquired in 1953. State investments in this sector will double in comparison with the 1951-55 period, whereas investment in all sectors will rise by only two-thirds. The Sixth Five Year Plan envisions completion of the revisions in the crop pattern begun in 1954

S-E-C-R-E-T

and, at least temporarily, no large labor withdrawals such as characterized Soviet development up to 1953. The incentives provided by higher prices to farms in 1953-55 will be continued at their present level but will be modified to encourage, in conjunction with other measures, communal production at the expense of private activities.

Economic policy in the period beyond 1960 will depend on the successes achieved by current programs for increasing labor productivity and agricultural production. There can be little doubt, however, that the basic concentration upon maximizing the output of heavy industry will still limit the range of policy choices in all other sectors. The explicit definition at the XXth Party Congress of the basic economic task of the USSR as the overtaking of the US not only in absolute but also in per capita production appears to project this pattern far into the future.

S-E-C-R-E-T

II. Size and Growth of the Soviet Economy.\*

A. Comparison Between the US and the USSR, 1955.

1. Allocation of Resources.

In 1955 there were significant differences between the ways in which the USSR allocated its 1,279 billion rubles of GNP and the manner in which the US chose to spend its 387 billion dollars worth of output.\*\* These differences in resource distribution illustrate the contrasting scales of value which govern economic decisions in the two economies. The USSR devoted 60.9 percent of available resources to consumption compared with nearly 69 percent in the US. Although the percentage allocation to consumption is not strikingly smaller than that in the US, an examination of the absolute size of these allocations in the light of the difference in population size shows more significant contrasts. The value of the Soviet allocation of resources to consumption is only about 23 percent as great as that of the US, yet these resources must support a population which is 20 percent larger than that of the US. Conversely, centralized control enabled the USSR to place greater emphasis on growth by devoting 23.9 percent of its product to gross investment, whereas the US was devoting only 18.4 percent of its resources to gross investment. The USSR expended a larger share of total output for defense -- 12.8 percent compared with 10.5 percent in the US. Both economies spend about the same proportion of national product on government administration.

Comparison of the two economies in terms of sectors of origin also shows significant contrasts.\*\*\* Industry comprises a somewhat larger share of product in the more developed US economy -- 37 compared with 34 percent. The lower level of economic development of the USSR is graphically reflected in the much larger share of income arising in agriculture -- 29 percent compared with 6 percent. The smaller role of trade and services, a combined total of 21.4 percent as against 44 in the US, is a function of the restriction of consumption by Soviet planners. The somewhat larger construction effort

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\* For detailed statistical tables on the Soviet economy, see Appendix A, Tables 19 through 24, pp. 77-88, below.

\*\* See Figure 1, following p. 16. These estimates are in terms of market prices.

\*\*\* See Figure 2, following p. 16. These estimates are in terms of factor prices -- that is, market prices less indirect taxes.

S-E-C-R-E-T

in the USSR is consistent with the heavier concentration on investment. The transport sector is also relatively larger in the USSR, reflecting the larger land area and the spatial separation of economic activity.

2. Dollar Comparisons of GNP and Its Components.

In order to make a dollar comparison of GNP and its principal use and origin components, as distinguished from a percentage breakdown of GNP in terms of native currencies, it is necessary to employ ruble-dollar conversion ratios pertinent to the total and to each component.\* On this basis, Soviet GNP in 1955 is computed at 146.5 billion 1955 dollars, or more than a third as large as US GNP. The USSR-US ratios for the end use components vary widely around this average. The dollar value of Soviet consumption is only about 23 percent that of the US. In contrast, investment expenditures are almost 55 percent as great, defense expenditures almost equal, and administrative expenditures 14 percent larger. These widely varying ratios provide a revealing insight into the values of the Soviet leadership.

B. Changes in Rate of Growth and Composition of GNP.

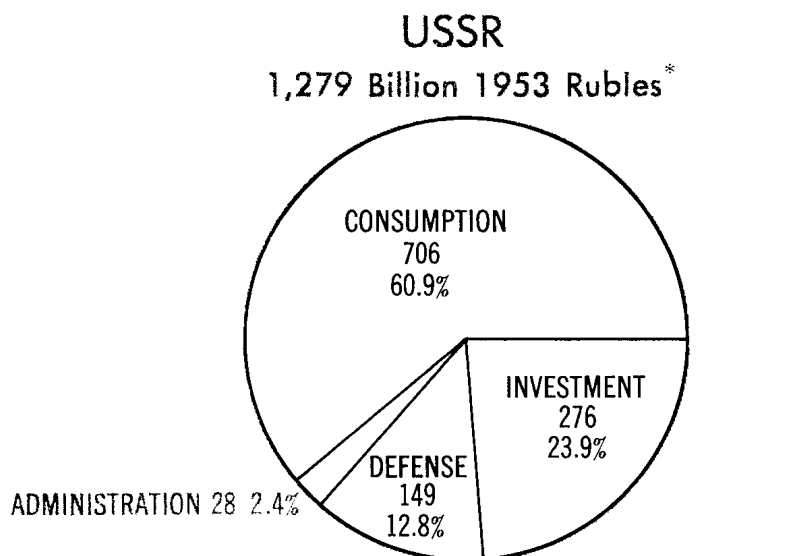
During the period of the Fifth Five Year Plan the rate of increase in Soviet GNP averaged 7.1 percent per year, or about double the rate of the US. Except for the 11-percent rise in 1951 reflecting the completion of the reconstruction program and the low 5-percent increase in transitionally depressed 1953, the annual rates in the USSR were about 6 percent. In the Sixth Five Year Plan period the average annual rate of growth will fall slightly to about 6.9 percent, or nearly double the US relative increase. The individual annual rates will rise above the 6 percent average of the past 2 years to a 7.0 percent average through 1959. The chief factors responsible for the rise are expanded production of livestock products based on the increase in grain output from the "new lands" and a stepping up of the capital investment effort after a slackening in 1955. In 1960 and 1961 the annual rate of growth will fall back to a 6.2 percent average as the agricultural expansion and capital investment efforts taper off.

During the past 5 years the USSR has spent its national product in various ways. (See Table 3.\*\*\*) The proportion of the national product available for personal and communal consumption fell slightly.

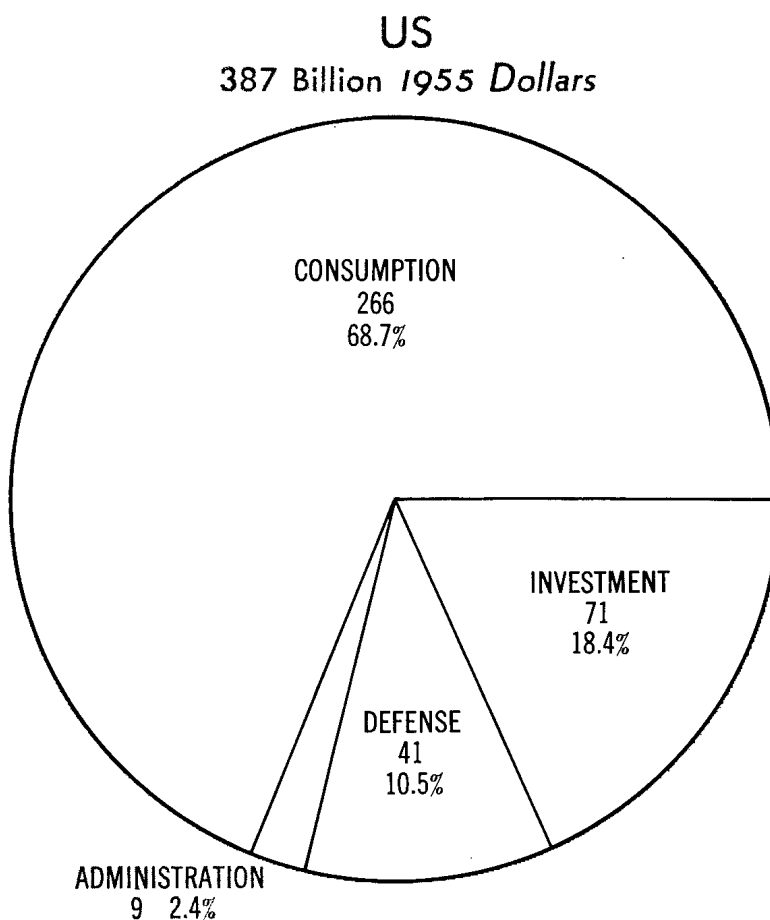
\* See Appendix B.

\*\*\* Table 3 follows on p. 17. See Appendix B on construction of indexes for the end uses of GNP.

## COMPARISON OF US AND SOVIET GROSS NATIONAL PRODUCTS, BY END USE, 1955



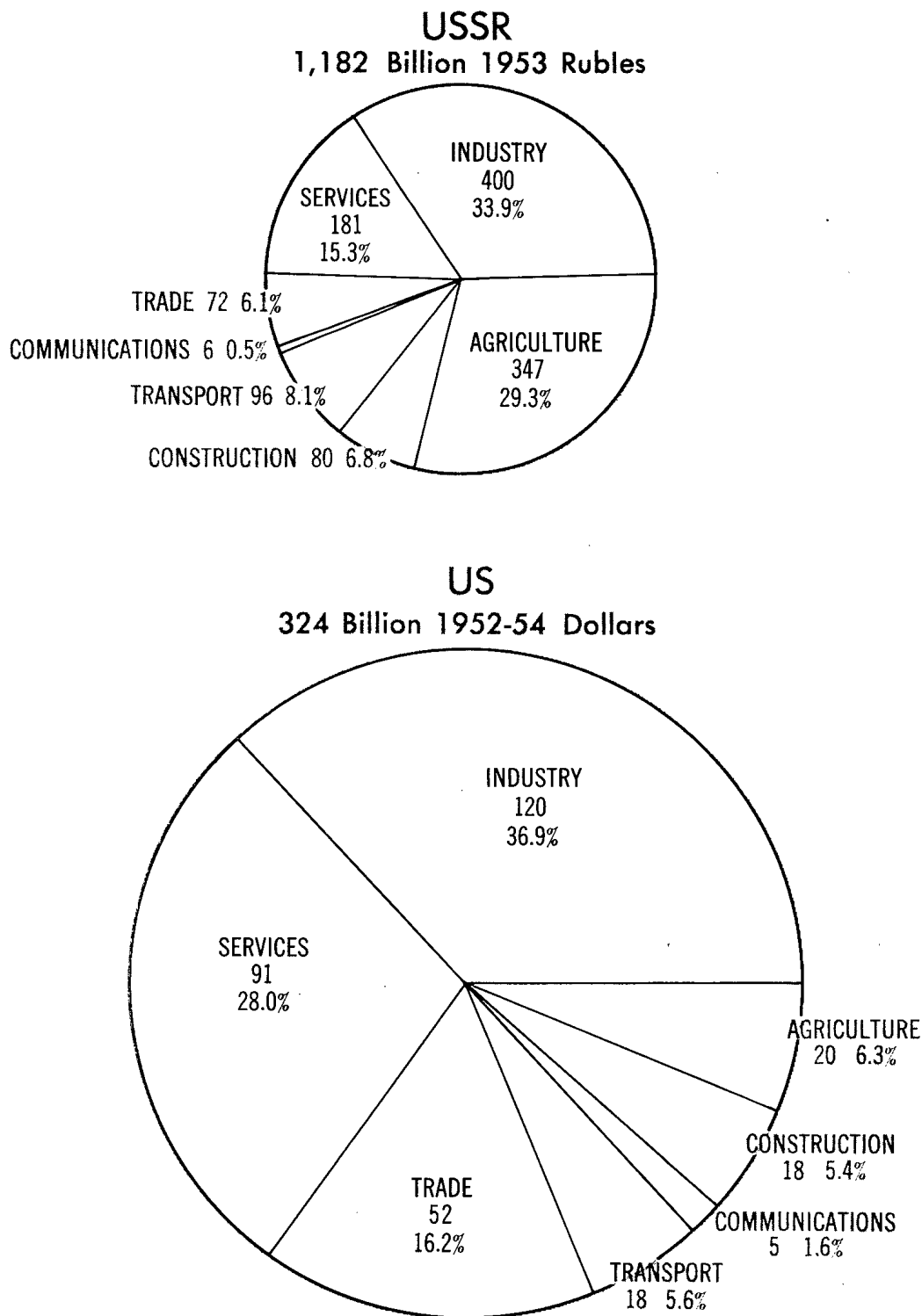
\*120 Billion rubles of turnover tax not distributed by end use.



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## COMPARISON OF US AVERAGE 1952-54, AND SOVIET 1955 GROSS NATIONAL PRODUCTS, BY SECTOR OF ORIGIN



S-E-C-R-E-T

Table 3

Soviet Gross National Product, by End Use a/  
Selected Years, 1948-61

End Use	Percent				
	1948	1950	1955	1960	1961
Consumption	63.6	62.0	60.9	58.5	57.8
Administration	5.4	3.7	2.4	1.8	1.7
Defense	13.4	13.2	12.8	11.8	11.8
Investment	17.6	21.1	23.9	27.9	28.7
Total gross national product	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

End Use	Billion 1953 Rubles				
	1948	1950	1955	1960	1961
Consumption	426.8	511.8	706.3	946.4	993.7
Administration	36.2	30.6	27.5	28.6	28.9
Defense	89.6	108.5	148.6	191.7	203.2
Investment	118.3	173.9	276.5	450.7	492.6
Allocated gross national product (in factor cost)	670.9	824.8	1,158.9	1,617.4	1,718.4
Undistributed Turnover Tax	69.5	85.2	119.6	167.4	177.1
Total gross national product	<u>740.4</u>	<u>910.0</u>	<u>1,278.5</u>	<u>1,784.8</u>	<u>1,895.5</u>

a. These estimates of GNP differ from other published CIA estimates because of a different estimate of the amount included in factor cost for factors of production in the USSR which are not actually compensated -- chiefly agricultural land rent and other agricultural capital charges. The estimate for these uncompensated factors in other published estimates was calculated on the assumption that the farmers' share of the consumers' expenditure (gross value of farm output as a percent of the retail value of agricultural products) is the same in the USSR as the average for US farmers during the postwar period.

The estimate in this report also uses a US analogy but makes allowance for the heavy emphasis of the USSR on grain production and the much less extensive processing of agricultural products in the USSR. The result is a much larger allowance for uncompensated factors, a larger GNP in rubles

S-E-C-R-E-T

Table 3

Soviet Gross National Product, by End Use a/  
Selected Years, 1948-61  
(Continued)

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of factor cost, and a larger percentage of consumption in GNP. This change does not affect the estimated rates of growth or the dollar value of GNP which are identical with those in other published estimates.

The share of total product expended for defense purposes has been almost constant at about 12 percent. The minor fluctuations which have occurred are explained by unplanned expenditures. There was a sharp decline in the percentage of resources allotted to government administration -- mainly a reflection of the reduction of the role of the MVD in economic activities. Investment was the only end use to gain relatively in these years, underscoring the emphasis on growth of the Soviet leadership.

These trends will, in general, continue during the Sixth Five Year Plan period. Consumption will command a declining share of the total, but will still rise in absolute terms by some 34 percent, permitting an annual per capita increase of 4.2 percent. Barring any deterioration in international relations, the share of output devoted to defense should decline with a growth of 29 percent. Continued priority to economic growth will mean a further increase in the share of GNP accruing to investment from 23.9 to 27.9 percent. In terms of rubles, investment will grow by about 65 percent. As the ability of the Soviet economy to expand output becomes increasingly restricted by the declining rate of increment to the labor force, greater reliance must be placed on capital investment. It is therefore not surprising that investment absorbs a growing proportion of GNP.

Differential growth trends are also evident in a historic comparison of sectors of origin of GNP. Table 4\* shows Soviet GNP by sector of origin for 1950, 1955, 1960, and 1961. The industrialization of the economy proceeded at a rapid pace under the Fifth Five Year Plan, industry being responsible for 33.9 percent of the national product in

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\* Table 4 follows on p. 19.

S-E-C-R-E-T

Table 4

Soviet Gross National Product, by Sector of Origin  
Selected Years, 1950-61

Sector	Percent			
	1950	1955	1960	1961
Industry	26.1	33.9	39.3	40.6
Agriculture	35.9	29.3	25.2	24.3
Construction	6.6	6.8	7.6	7.8
Transport	6.9	8.1	8.3	8.1
Communications	0.4	0.5	0.5	0.6
Trade	4.5	6.1	6.4	6.5
Services	19.6	15.3	12.7	12.1
Total gross national product	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

Sector	Billion 1953 Rubles			
	1950	1955	1960	1961
Industry	226.7	400.3	663.6	733.4
Agriculture	311.7	346.4	425.8	438.4
Construction	57.5	80.1	128.2	141.0
Transport	59.7	96.4	140.6	146.5
Communications	3.7	5.7	8.8	10.1
Trade	39.0	72.1	108.2	116.8
Services	170.1	181.0	213.6	219.0
Total gross national product	<u>864.4</u>	<u>1,182.0</u>	<u>1,688.8</u>	<u>1,805.2</u>

1955 compared with 26.1 percent 5 years before. During this period, agriculture surrendered first place to industry, originating about 29 percent of GNP in 1955 compared with over 36 percent in 1950. Transport was of growing relative importance as the expanding regions of the country became increasingly interdependent. The role of trade also became relatively larger as production of consumer goods was being shifted from home production to manufacture and distribution through

S-E-C-R-E-T

state outlets and as the demands of institutional consumers declined. The services sector declined relatively during these years because of the constant size of the military manpower establishment and also because of the loss of economic functions by the MVD.

The trends which the sectors of origin exhibited during the Fifth Five Year Plan will continue during the Sixth, but to a lesser degree. Industry will be originating about 39 percent of GNP by 1960 and in ruble terms its contribution will be 65 percent greater. Within industry the growth in output of capital goods will exceed that of consumer goods -- 70 percent compared with 49 percent. The contribution of agriculture to GNP will continue to decrease although at a decelerated rate as it becomes necessary for the regime to raise relative incomes in farming to meet enlarged production targets. By 1960, 25 percent of GNP will still originate on the farm. By value, agricultural output probably will rise by 23 percent. Construction will grow somewhat faster than the economy as a whole, as the investment emphasis becomes stronger. Transport and communications will increase at rates equal to the national average. Trade will grow at approximately the national average. Planned reductions in the size of the armed forces and the approach to a limit on further expansion of education will serve to decrease further the percentage of GNP generated by services.

C. Comparisons of Economic Growth.

The more rapid rate of growth in the USSR compared with the US implies a diminution of the differential between the two economies. Table 5\* shows the comparison of GNP's of the USSR and US for selected years, 1948-61. This is true for relative sizes but not for absolute differences. In 1950 the Soviet economy was only about one-third the size of that of the US but by 1955 the Soviet economy had grown to nearly 40 percent of the size of the US economy. Meanwhile the absolute production differential between the two countries was widening -- from \$218 billion to \$241 billion. By 1960 the Soviet GNP will be a somewhat larger proportion of the US, rising from about 40 to 44 percent. The absolute gap between the US and Soviet economies will widen further -- to \$261 billion. If present trends are projected, the absolute gap between the GNP of the USSR and the US reaches its widest point in the second half of the 1960's and then begins to narrow.

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\* Table 5 follows on p. 21.

S-E-C-R-E-T

Table 5

Comparison of Gross National Products of the USSR and the US  
Selected Years, 1948-61

	Billion 1955 US \$				
	<u>1948</u>	<u>1950</u>	<u>1955</u>	<u>1960</u>	<u>1961</u>
US	295.8	321.8	387.2	465.9	483.6
USSR	84.9	104.3	146.5	204.5	217.2
Absolute difference	210.9	217.5	240.7	261.4	266.4
Ratio (USSR as a percent of US)	29	32	38	44	45

Similar relationships result from the rates of growth of GNP for the Sino-Soviet Bloc and the West, defined as the US plus the European members of NATO. Table 6\* shows the comparison of GNP's of the West and the Sino-Soviet Bloc for selected years, 1948-61. In 1950 the combined economies of the Bloc were about one-third the size of those of the West. By 1955 the Bloc had an aggregate output 37 percent that of the West. The absolute differential widened from \$394 billion to \$442 billion, however. During the next 5 years the GNP of the Bloc will be growing by 6.4 percent a year whereas that of the West will rise at an annual rate of 3.7 percent. By 1960, total Bloc output will be 42 percent as large as that of the West, but the absolute gap will still increase from \$442 billion to \$487 billion.

\* Table 6 follows on p. 22.

S-E-C-R-E-T

Table 6

Comparison of Gross National Products of the West and the Sino-Soviet Bloc  
Selected Years, 1948-61

	<u>Billion 1955 US \$</u>				
	<u>1948</u>	<u>1950</u>	<u>1955</u>	<u>1960</u>	<u>1961</u>
US	295.8	321.8	387.2	465.9	483.6
Other NATO	178.7	252.0	314.0	374.0	392.0
Total West	<u>474.5</u>	<u>573.8</u>	<u>701.2</u>	<u>839.9</u>	<u>875.6</u>
USSR	84.9	104.3	146.5	204.5	217.2
European Satellites	34.1	40.7	57.0	75.7	79.0
Communist China	25.0	35.0	56.0	73.0	76.0
Total Soviet Bloc	<u>144.0</u>	<u>180.0</u>	<u>259.5</u>	<u>353.2</u>	<u>372.2</u>
Absolute difference	330.5	393.8	441.7	486.7	503.4
Ratio (Soviet Bloc as a percent of West)	30	31	37	42	42

S-E-C-R-E-T

### III. Soviet Industrial Production.

#### A. Trends in Industrial Growth.

Soviet industrial production during the Fifth Five Year Plan increased by 76 percent, thereby substantially overfulfilling the plan goal.\* Heavy industry, because of its favored position as a resource claimant, grew by 82 percent, whereas the output of light industry increased by only 54 percent.

The Sixth Five Year Plan calls for industrial output to be 65 percent greater in 1960 than in 1955. It is estimated that increases in investment and the labor force will enable Soviet industry to meet this target and overfulfillment of the industrial target is regarded as probable.

Although this estimated rate of growth of industrial production during 1956-60 is lower than that achieved during 1951-55, the rate of growth for heavy industry will continue to be high by US standards, Soviet growth being more than twice the rate of growth of US heavy industry during 1951-55. At present, measured by net value of output (value added), Soviet heavy industry is about 35 percent the size of US heavy industry, in terms of 1955 dollars. But by 1960, Soviet heavy industry will be about 45 percent of its US counterpart.

The slackening off in the rate of growth of industrial output during 1956-60 relative to 1951-55 will come about principally as a result of a decline in the rate of growth of the industrial labor force and a planned reduction in the workweek from 48 hours to 42 hours which is to be put in effect by 1960. The number of workers in industry during 1956-60 will increase by about 16 to 20 percent compared with a 1951-55 increase of 23 percent. The decline in the rate of growth of the industrial work force is, in turn, a manifestation of the low birth rate of the war years and of the cessation, from 1953 onward, of the flow of workers from agriculture to industry. The industrial labor force may increase by an even greater margin during the latter half of the plan, however, if agricultural workers again move into industry. This may become possible if the USSR is able by that time to increase significantly the mechanization of labor-consuming tasks in agriculture, such as post-harvesting operations in small

\* See Appendix B.

S-E-C-R-E-T



S-E-C-R-E-T

grains and corn cultivation and harvesting, or to increase the input of labor time obtained from collective farm workers.

As a result of the greater scarcity of labor expected in 1956-60 relative to 1951-55, the Sixth Five Year Plan places heavy reliance on productivity increases for the achievement of production goals in certain key industries. In the steel industry, for example, it is planned to achieve 35, 47, and 40 percent of the increased output of pig iron, crude, and finished steel, respectively, during 1956-60 through increased productivity. Productivity increases of this magnitude will be attained principally through the modernization of obsolete enterprises. Production in the machine-building industries has now reached a level of output which will permit extensive replacement of equipment in existing plants in addition to meeting the requirements of new plants.

A considerable amount of new plant capacity will nevertheless be required to supplement production increases derived from productivity gains and to prepare for future growth by an extension of the materials base. To meet this need, a program of new construction concentrated in the Urals and areas east of the Urals will be undertaken. But if the USSR does no better in meeting industrial construction targets in 1956-60 than it did in 1951-55,\* fulfillment of the gross industrial production plan may require overfulfillment of the plan for the machinery and equipment industries, such as occurred in the Fifth Five Year Plan period.

The pattern of investment allocations clearly indicates the priority of industry in the Soviet economy and, within this priority, of heavy over light industry. Bulganin informed the XXth Party Congress that industrial investment during 1956-60 will be approximately two-thirds of total state investment, the same share that prevailed in both the Fourth and Fifth Five Year Plans, and that the allocation of industrial investment between heavy and light industry will also be the same as in the Fourth and Fifth Plan periods -- about 91 percent for heavy industry and 9 percent for light. Comparison of investment allocations in terms of total 5-year periods obscures some minor year-to-year shifts, but the general continuity of policy is striking.

\* The latest available information on construction fulfillment indicates that only 81.6 percent of the 4-year construction plan was fulfilled by the Ministry of Construction of Metallurgical and Chemical Enterprises and that the Ministry of Construction fulfilled only 80 percent of its 4-year plan.

- 24 -

S-E-C-R-E-T

S-E-C-R-E-T

There will be a change, however, in the investment pattern within heavy industry during 1956-60 relative to 1951-55. Investment allocations will be oriented toward the materials branches of industry, with chemicals, nonferrous metals, electric power, petroleum, and construction materials each receiving a greater share of heavy industry investment while the share going to machine-building and metalworking declines.

Soviet industrial production trends during 1956-60 relative to 1951-55 (see Table 7\*) will be characterized by the following:

(1) A substantially increased rate of growth of chemicals output -- 13.2 percent compounded annually compared with 10.5 percent for industry -- reflecting a long overdue need for an expansion vital to both industry and agriculture.

(2) A more or less undiminished growth rate for energy, construction materials, and forest products. With respect to electric power this will mean an increase in output of 88 percent over 1955, an absolute expansion of 150 billion kilowatt-hours (kwh) during 1956-60 compared with a gain of 80 billion kwh during 1951-55.

(3) A falling off in the rate of growth of metals, machinery and metalworking, and consumer goods items. The machinery and metalworking branch of heavy industry, however, will continue to grow at a rate substantially higher than industry even though total output will slip 22 percentage points (1955=100) from the phenomenal increase of 102 percent for 1951-55 (1950=100).

B. Patterns of Sector Growth.

1. Energy.

The supply of primary energy, in standard fuel units, will increase by 55 percent during 1956-60 -- a slightly larger growth than the 53 percent attained during 1951-55. The marked strain on the energy supply that has been evident during the past 2 years will be eased slightly during 1956-60 because of the narrower disproportion between the rates of growth of energy and industry.

\* Table 7 follows on p. 27.

S-E-C-R-E-T

Of the various energy sources in the fuel balance, crude oil will increase by 91 percent, natural gas by 288 percent, coal by 34 percent, and hydroelectric power by 155 percent. The most important change in the composition of the fuel balance implied by this growth pattern will be a decline in the share of coal from 64 percent in 1955 to approximately 56 percent in 1960. Simultaneously, the combined share of crude oil and natural gas will increase from nearly 23 percent in 1955 to 31 percent in 1961.

A major factor underlying the planned shifts in the fuel balance will be an increased emphasis upon fuels with lower extraction costs. Thus, while production in standard fuel units is to increase approximately 55 percent during 1956-60, production costs are to increase not more than 30 percent. Reductions in the average cost per ton of standard fuel for coal and petroleum will bring about an even greater decrease in total cost.

a. Electric Power.

Production of electric power during 1951-55 grew at a faster rate than industrial production, the respective increases being 88 and 76 percent. During the Sixth Five Year Plan, production of electric power will again grow by approximately 88 percent, whereas industrial production will increase by only 65 percent. This sustained rate of growth of power production in relation to a declining rate of growth in industrial production will permit a relatively greater consumption of power by the electroprocess industries during 1956-60 than in the past 5 years.

Although it is estimated that the 1960 goal of 320 billion kwh of electric power will be attained, it is probable that the plan for installing new generating capacity will be underfulfilled by about 5 to 10 percent. Thus, as in the last two Five Year Plans, the perennial Soviet goal of attaining a 10-percent "reserve capacity" probably will not be attained.

The Soviet program to construct nuclear thermal electric stations having a total capacity of 2 million to 2.5 million kilowatts (kw) during the Sixth Five Year Plan is highly ambitious but can conceivably be fulfilled. Current British plans call for approximately 1.5 million to 2 million kw of nuclear power facilities by about 1965, whereas the US plans to have 800,000 kw of installed capacity by 1960. 9/ The Soviet program is certain to

S-E-C-R-E-T

Table 7

Estimated Soviet Production Indexes  
for the Fifth and Sixth Five Year Plans a/

	Fifth Five Year Plan (1950 = 100)	Sixth Five Year Plan (1955 = 100)
Total industry	176	165
Heavy industry	182	170
Energy	171	178
Metals	174	158
Chemicals	168	186
Construction materials	250	245
Forest products	123	123
Machinery and metalworking (including defense)	202	180
Defense	182	142
Light industry	154	147
Food products	130	130
Manufactured consumer goods	172	153
Consumer durables	385	228

a. See the note on industrial production indexes in Appendix B for details on the construction of these indexes.

encounter many unforeseen difficulties owing to the experimental nature of the undertaking, especially with regard to new construction techniques that must necessarily be employed. Assuming the USSR will be able to attain 2 million kw of capacity by the end of 1960, however, these nuclear power plants would then account for approximately 2.5 percent of total planned generating capacity and possibly about 3 percent of the total planned production of electric power.

- 27 -

S-E-C-R-E-T

S-E-C-R-E-T

b. Coal.

The Fifth Five Year Plan originally established a 1955 goal of 373 million metric\* tons of coal (hard coal plus lignite), or 43 percent above production of 1950. Production of coal was increased by 19 million to 20 million tons annually in the first 3 years of the plan period, by 26 million tons in 1954, and by 44 million tons in 1955, resulting in the overfulfillment of the Five Year Plan goal by 18 million tons. The rapid increase in production during 1954-55 was necessary to remedy a shortage in the supply of energy from primary sources and was achieved principally by augmenting the industry's labor force and overfulfilling production from strip mines.

During 1956-60, production of coal will increase by about 52 percent, or by 202 million tons over 1955. Approximately 35 percent of this additional production is to be obtained from mines already in operation, whereas the balance will be realized from new mines brought into production during the period.

The problem of labor productivity will be significant during 1956-60. Despite the fact that wage scales for the coal industry are the highest in industry and despite the great emphasis on mechanization of coal mining, labor productivity averaged only 19 percent higher in 1954 than in 1940. This relatively poor performance has been partly due to inefficient utilization of coal-mining machinery which, in turn, is a result of a shortage of conveyors in capacities adequate to transport coal away from coal-cutting machinery. A strong attempt will be made to overcome this deficiency and to make better use of equipment in general. If the attempt is relatively unsuccessful, however, plan fulfillment will depend on greater than planned additions to the labor force.

c. Petroleum.

Production of petroleum products, including natural gas, rose from 38 million tons in 1950 to 68 million tons in 1955 -- an increase of 82 percent. Production will increase to 146 million tons in 1960, a gain of 113 percent over 1955, and may attain 167 million tons in 1961. Continued development of eastern oilfields, particularly in the Ural-Volga region, will further depress the relative

\* Tonnages throughout this report are given in metric tons unless otherwise indicated.

S-E-C-R-E-T

importance of the Caucasus, which presently supplies about 30 percent of total production of crude oil.

Preliminary estimates indicate that in 1955 the USSR petroleum import balance was reduced to less than 1 million tons (the lowest postwar level), reflecting an improved domestic supply position. Still, the net gasoline import balance amounted to 1.6 million tons in 1955, which was about 15 percent of domestic production. By 1960, however, production of petroleum probably will be more than sufficient to meet domestic consumption requirements, and the USSR will be in a position to increase the export of crude oil and/or petroleum products.

## 2. Metallurgy and Industrial Materials.

Production of steel by 1960 is to increase 23 million tons over 1955 compared with an increase of 18 million tons during 1951-55. Despite the large absolute increase in production, the rate of expansion during 1956-60 will decrease to 8.5 percent per year from an annual average increase of 10.7 percent during 1951-55. This decline will be paralleled by a slowly declining rate of growth in the machinery and metalworking sector. A contrasting picture is presented by stainless steel and heat-resistant alloys. Capacity for production of these materials is to increase an additional 220 percent by 1960 in an expansion which is of particular significance to the military program and to the production of high-temperature and corrosion-resistant equipment.

Production of nonferrous metals will grow by an estimated 83 percent during 1956-60 compared with an increase of 108 percent during 1951-55. Of the major metals, production of aluminum and copper will increase in the Sixth Five Year Plan period at a more rapid rate than that achieved during the Fifth Five Year Plan period, but production of lead and zinc will increase at a slower rate. Achievement of the 1960 target for production of copper depends on development of lower grade ore bodies in Kazakhstan and will be difficult to accomplish. In 1953-55, imports of copper into the Soviet Bloc have averaged more than 110,000 tons per year -- about 15 to 20 percent of Soviet production. The bulk of this goes to the USSR. The Soviet Bloc is deficient in exploitable bauxite; it is estimated that, to achieve the 1960 target for production of aluminum in the USSR, some 1.5 million tons of bauxite may have to be imported from the West in that year -- an estimated one-third of Soviet Bloc production.

- 29 -

S-E-C-R-E-T

S-E-C-R-E-T

Table 8 shows Soviet goals for production of nonferrous metals for 1955 and 1960.

Table 8  
Soviet Goals for Production of Nonferrous Metals  
1955 and 1960

Metal	1955 as Increase over 1950		Percent
	Plan	Actual	1960 as Increase over 1955 <sup>a/</sup>
Lead	170	130	42
Zinc	150	100	77
Aluminum	160	180	110
Copper, refined	90	53	60

a. Estimated increases for 1960 are identical with planned increases.

Whereas in general the rate of growth for metals will decline, production of plastics will increase at an accelerated rate. Plastics have frequently replaced scarce metals and have been cheaper, more convenient to process, or have given better performance in special tasks, such as resistance to corrosion. An accelerated expansion of the entire chemical industry is planned, especially in the fields of synthetic rubber, plastics, synthetic fibers, and the synthetic organic materials needed in the manufacture of these products. Although it is planned to double production of synthetic fertilizers, the nonfulfillment of the less ambitious 1955 production target for this item indicates that special effort will be required to achieve this goal.

Production of construction materials may not achieve the planned level in 1960 in spite of recently announced intentions to accelerate capital investment in the industry. Production of cement

S-E-C-R-E-T

has lagged seriously in the past, but in 1956 capital investment in cement plants is to be doubled over 1955. Cement will be of particular importance both for the hydroelectric program and for the manufacture of prestressed concrete forms, highly emphasized in the new construction programs.

3. Machinery and Equipment.

The 1960 goals for production of machinery and equipment require, in general, more modest percentage increases than did the Fifth Five Year Plan. Years of priority expansion in this sector have brought the USSR to a point at which it has export potential for the more basic types of machine tools and industrial installations. In 1955, Soviet production of machine tools, excluding metalforming equipment, exceeded US production in terms of numbers of units. An accelerated expansion will occur in the production of instruments\* in order to support sharply increased instrumentation of complex military end items as well as of industrial production processes. Tractors and other major types of agricultural equipment are being stressed in the accelerated program of mechanization of agriculture. During the plan period, production of steam locomotives will be discontinued and a conversion begun to diesel and electric locomotives, which are to carry 40 to 45 percent of the rail freight turnover in 1960. The program requires delivery to the railroads over the 5-year period of 2,000 electric locomotives and 2,250 main-line 2-section diesel locomotives.

The campaign for increased efficiency and for technological progress assumes special importance in the machinery and equipment sector. Renovation of old plants and equipment, automation, and weight reduction of military end items are scheduled for this industry in a drive to increase output from existing enterprises, to make economical use of the metal supply, and to increase labor productivity. Heavy capital requirements elsewhere in the economy -- for example, the expansion of production of power and industrial materials -- will spur the effort to increase production of machinery and equipment with relatively moderate additional capital expenditures.

\* The term instruments includes electronic and mechanical control systems.



S-E-C-R-E-T

4. Durable Consumer Goods.

Consumer durables are a very small component of the Soviet metalworking industry and are capable of large percentage increases in production because of the small current scale of production. This is particularly true of luxury durables such as television sets, refrigerators, sewing machines, and washing machines. The targets for consumer durables are within Soviet capabilities and will not of themselves endanger the growth of production of producer goods. Historically, however, this has been a category of production which has suffered whenever industry has run short of resources, other branches having prior claim in allocation.

C. Industrial Labor Force.

The industrial labor force probably will grow by about 16 to 20 percent during 1956-60 compared with a growth of 23 percent during 1951-55. In 1950 the average annual industrial employment was 14.1 million workers; in 1955 it was 17.4 million; and by 1960 it will rise to an estimated 20.1 million to 20.9 million.

Expansion to this extent will be required by a probable underfulfillment of the 1960 goals for increased labor productivity. The increase in the industrial labor force projected in the Sixth Five Year Plan is only 10 percent, or 1.7 million workers, compared with estimated probable additions of 2.7 million to 3.5 million.

As a corollary to the low planned rate of increase in the labor force, the Sixth Five Year Plan contains the goal of a 50-percent increase in annual output per industrial worker in 1960 compared with 1955. The emphasis on replacement of obsolescent equipment, adoption of improved technology, and more efficient organization of production will assist the growth of productivity. Actually, however, the gain in man-hour productivity will have to be much higher than during 1951-55 -- 71 percent as opposed to 44 percent -- if the promised reduction in the workweek from 48 hours to 42 hours is to occur by 1960. This latter productivity target appears too high, and an underfulfillment of about 5 percent is anticipated. As a consequence, it is estimated that industry will compensate for this failure by adding about 1.0 million to 1.8 million extra workers, in addition to the planned increase of 1.7 million, to its labor force by 1960.

S-E-C-R-E-T

These extra workers required for industry will be obtained in most part from the increased labor supply resulting from the 1956-57 planned reduction in the armed forces of 1.2 million men. Limited further additions may be available from a small reserve of unallocated future increments to the labor force.\* If these reallocations prove insufficient, several recourses might be available. Failure to carry out the reduction to a 41-hour week, as promised for 1961, would ease the pressure on man-hour productivity. Alternatively, it might be decided to restrict the increase in the agricultural labor force more than is contemplated in the Sixth Five Year Plan.

D. Expansion in the East.

In 1956-60, capital investment in the Urals and the areas east of the Urals is to double compared with 1951-55 and is to comprise half of the capital investment of the USSR. By 1960 this vast area is to produce more iron and coal than did the entire USSR in 1950 and more electric power and cement than the whole country produced in 1954.. Within the next 10 years, Siberia is to become the leading producing area of the USSR for coal and electricity. Simultaneously, it is to become the principal center for industries which are heavy users of fuel and power -- aluminum, magnesium, titanium, electrometallurgy, coke byproducts, and electrochemicals. The planned industrial development in Kazakhstan and Siberia in 1956-60 is shown in Figure 3.\*\*

Within 10 to 15 years, Siberia is to become a metallurgical center with an annual production of 15 million to 20 million tons of pig iron. Industrial activity in the Kuznets Basin will be greatly expanded by the addition of the new West Siberian Metallurgical Plant (location unannounced) and a new center east of Lake Baikal. By 1960, one blast furnace is to be operative at the West Siberian Metallurgical Plant. The basis of this metallurgical development will be the Siberian resources of iron and coal. The Kuznets and Irkutsk Basin have 25 percent of the geologic reserves of hard coal in the USSR and 35 percent of the coking coal reserves. Siberian iron ore reserves, on the same order of magnitude as the famous Krivoy Rog deposits, are claimed to total 2 billion tons.

During 1956-60, thermal power will remain the principal source of Siberian electric power. A major expansion will be begun, however, in the generation of hydroelectric power. Large hydroelectric stations

\* The existence of such a reserve may be hypothesized, but not proved.

\*\* Following p. 34.

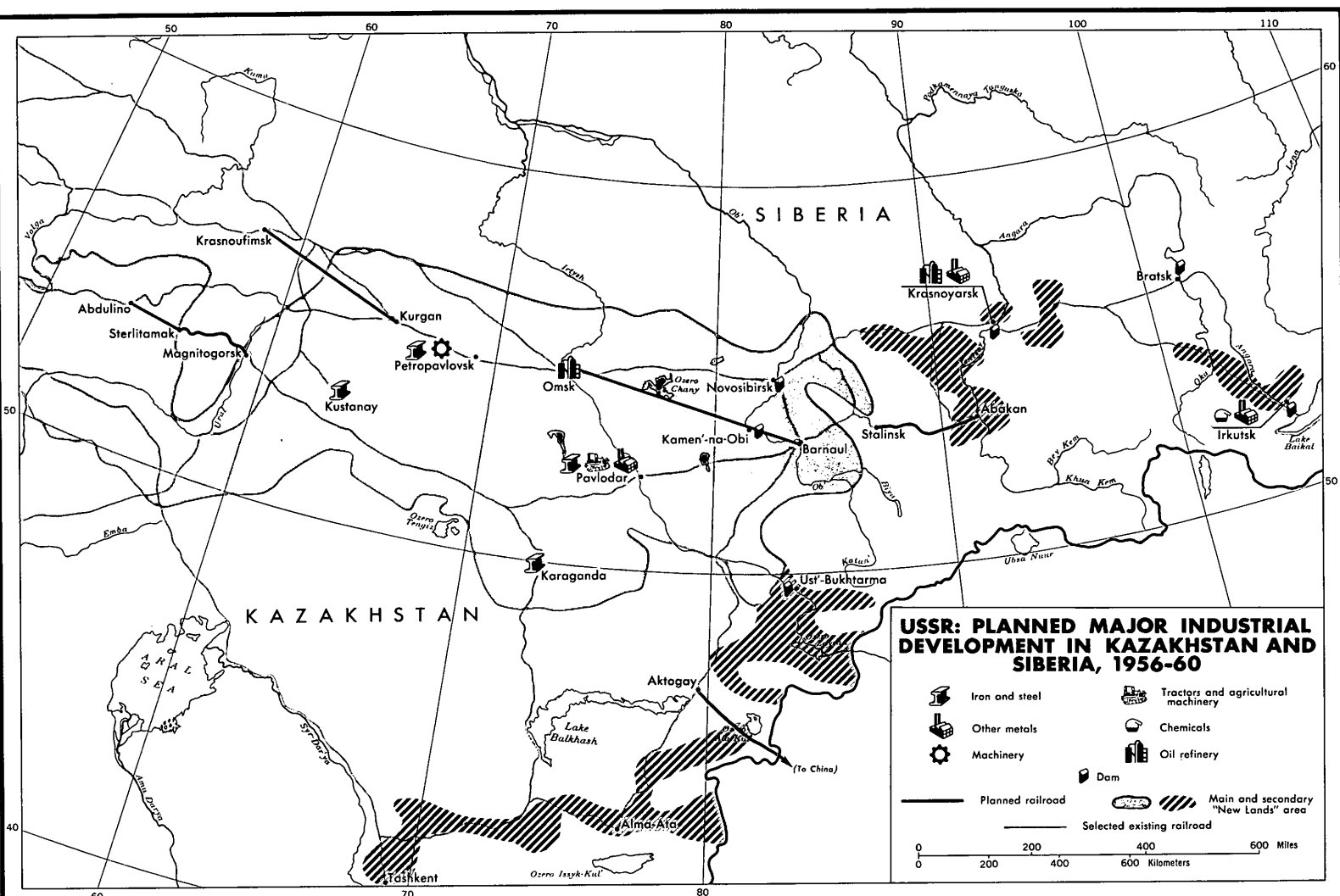
S-E-C-R-E-T

are to be commissioned at Irkutsk and Novosibirsk, and the first section of the Bratsk station is to be commissioned. Eventually the Bratsk project and a new project at Krasnoyarsk will each have a capacity of 3.2 million kw, making them the largest hydroelectric stations in the world. Another new station is to be started at Kamensk on the Ob, and work is to begin on a unified power system extending from Novosibirsk to Irkutsk.

On the basis of power and metallurgical expansion, the Sixth Five Year Plan envisions construction in Siberia of 3 aluminum plants, oil refineries, 5 machine-tool construction plants, 8 construction and transport equipment plants, an electric locomotive plant, and several chemical plants. In addition, six metalforming equipment plants are to be constructed in Siberia and the Urals. Increased local supplies of aluminum, fuels, titanium, magnesium, synthetic rubber, and other basic materials will facilitate expansion of the aircraft industry in this area.

A major expansion of Siberian transport facilities will occur before 1960. New rail lines will enlarge transport capacity between the Kuznets Basin and the Urals and will make Minusinsk iron ore available to the Kuznets Basin. Of these, the Omsk-Barnaul and Stalinsk-Abakan lines are the most important. As a long-term project extending beyond 1960, construction will be started on an oil pipeline extending from the Bashkir oilfields southwest of the Urals to Irkutsk. A refinery at Omsk is to be completed by 1960. Development of ports and maritime transport in the Far Eastern Basin is stressed in the new Five Year Plan.

A parallel economic build-up in Kazakhstan is closely linked with the Siberian expansion. This is best seen in the new linkage which is planned between iron ore from the newly developed Kustanay deposits (2 billion to 4 billion tons) and coal from Karaganda and the Kuznets Basin (Siberia). By 1960, 2 large blast furnaces with a combined capacity of 1.35 million tons are to be operative at Temir-Tau. A continuous sheet rolling mill is to be constructed in the same city. A foundry, an ore concentrating combine, and a metallurgical plant are to be constructed in Petropavlovsk. An aluminum plant, a ferroalloy plant, and a plant for the construction of agricultural combines are to be built at Pavlodar. In addition, several chemical plants and engineering plants will be constructed at other locations.



S-E-C-R-E-T

Kazakhstan assumes particular importance in the Sixth Five Year Plan as a source of minerals. In 1955 it was announced that Kazakhstan produced 57 percent of the copper in the USSR, 60 percent of the lead, 58 percent of the cadmium, 26 percent of the nickel, and 22 percent of the molybdenum and iron. Kazakhstan holds first place in the USSR in measured reserves of copper, lead, zinc, silver, cadmium, boron, potassium salts, tungsten, molybdenum, and iron.

Considerations of economic growth probably are sufficient reason for the movement of industry to the east, where little-exploited resources offer a greater long-run growth potential than further development of the more mature regions of European Russia. This motivation is reinforced, however, by the reduced vulnerability to military action which such a movement would afford. The character of the industrialization effort in these regions, stressing inputs to the aircraft industry, indicates that this factor has been considered in Soviet planning.

This development will pose great problems, but they should be overcome with proper planning. Some mistakes have already been made, such as a major industrial plant being constructed too close to a projected reservoir site, requiring an indefinite postponement in the construction of the hydroelectric station. Problems associated with the eastward expansion, such as location planning and the questions of balancing transport, power, and industrial facilities, should be resolved by the greater attention which the USSR is now paying to long-term economic planning.

The sizable industrial expansion planned for 1956-60 in Siberia and Kazakhstan will create a manpower problem arising from the establishment of new plants requiring complete new labor force in areas which have neither large urban populations nor sufficient skilled, unskilled, and professional labor. Khrushchev has already indicated there will be need for shock work, with teams of all types of labor going out from existing plants to form the nucleus for new plants and for new industrial towns. Around such a nucleus, it will be possible to build further by sending young people who have been added recently to the labor force. Food will be supplied from the acreage expansions of the "new lands." With the creation of new industrial towns and the continued displacement of workers from families and former homes, there will be housing difficulties and social problems in the new areas.

- 35 -

S-E-C-R-E-T

S-E-C-R-E-T

E. Technology in Industry.

1. General.

Raising the technical level of industry is a major task of the Sixth Five Year Plan. Technological advance during this period will be characterized by an extensive modernization program, increased emphasis on automation of industrial processes, and improvements in managerial techniques.

Modernization of existing plant and equipment will play a substantially greater role than in previous plans. According to Bulganin, "In the first and second Five Year Plans our enterprises were equipped with what was then the most perfect equipment . . . . Over 20 years have passed since then. During the war the provisioning of industrial plants with new equipment was carried out only to an insignificant extent. In the postwar years equipment was supplemented by new machine tools and machines but nevertheless there are still many antiquated machines."

The USSR is now and will be in a position to reequip obsolescent plants because of the substantially higher past and future rate of growth of machinery and equipment in relation to industrial construction. It is important to note, however, that reequipment will be carried out only on a selective basis and will be concentrated principally in metal-working and foundry machinery, railroad rolling stock, tractors and agricultural machinery, and textile and food machinery.

The automation\* of industrial processes has been propagandized extensively and is to be expanded considerably during the period of the Sixth Five Year Plan. Analysis of Soviet scientific literature on the basic theories of communications, probability, physics, and electronics indicates that the USSR has the ability to meet its plans for designing more complex systems than are presently scheduled for installation in the near future.

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\* Automation should be distinguished from mechanization, which is simply the use of machines to ease the physical effort of the operator. Automation is defined in the USSR as the use of devices which control the production process (at a specified level of accuracy and efficiency) so that the human operator has only to observe the correct functioning of the whole system.

- 36 -

S-E-C-R-E-T

S-E-C-R-E-T

Another aspect of the program for raising the technical level of industry is the announced effort to improve managerial techniques. Soviet leaders strongly emphasized to the XXth Party Congress the need for a transition to greater specialization and cooperation in industry, for an improvement in the organization of production processes, and for an increased assumption of decision-making powers on the part of executives of the economic ministries, trade unions, and Party organizations.

In order to clear the way for a program of technical advance, the Soviet leaders have specifically renounced two points of doctrine. The first is the Marxist dogma which maintains that obsolescence is peculiar to capitalism and cannot occur in a socialist economy -- this has had the effect of justifying the use of inefficient machinery until it was finally beyond repair. The second is the notion that Soviet excellence rendered a study of capitalist accomplishments unnecessary and even unpatriotic. This policy, which was part of a broader campaign against "kowtowing to the West," has now been ridiculed and replaced by an insistence on constant attention to the technical achievements of capitalism.

## 2. Electric Power.

A comparison of the heat rate, or fuel consumption per kwh, in the generation of electricity by thermal electric power plants of the USSR and the US indicates that the USSR lags behind the US by about 5 years in the level of technology of electric power generation. The average heat rate for all thermal electric power plants in the USSR was reported to be about 15,200 BTU/kwh in 1954, 10/ whereas the thermal electric power plants of the US electric utility industry were at this efficiency level in 1948-49.

A comparison of turbines and generators in use in the USSR and the US gives further indication of the lag in Soviet technology. The USSR claims that in 1954 about one-third of the capacity of thermal electric stations of the Ministry of Electric Power Stations operated on steam of high parameters, in the order of 90 atmospheres and 500 degrees Centigrade. 11/ About two-thirds of the capacity of the US electric utility industry operates with steam of similar high pressures and temperatures. The highest steam pressure utilized in the USSR at present is 170 atmospheres, 12/ whereas in the US, pressures of nearly twice that magnitude are being utilized.

- 37 -

S-E-C-R-E-T

S-E-C-R-E-T

In the field of nuclear power reactor development, it is believed that Soviet technology approaches the US level and in the transmission of electric power that Soviet technology equals or even surpasses that of the US. Nevertheless, it is estimated that the industry as a whole lags behind the US electric power generation industry by at least 5 years. The gap has been narrowed considerably in the past 10 years and may be reduced somewhat further during the period of the Sixth Five Year Plan. One of the goals of the Sixth Five Year Plan is to put into operation by 1960 a steam turbogenerator with a capacity of 300,000 kw operating under steam pressure of 300 atmospheres.

3. Coal.

Soviet coal mining technology during 1956-60 will feature the expansion of strip mining and the introduction, on a small scale, of hydraulic mining. Strip mining, which in 1955 accounted for about 16 percent of total coal production, will constitute approximately 21 percent of 1960 production. The greater relative concentration on strip mining during 1956-60 is due to the larger productivity gains that can be achieved by stripping compared with underground extraction. In fact, the labor productivity plan for the coal industry in 1955 was fulfilled only because of the overfulfillment of the productivity goal in strip mining.

Soviet coal mining equipment probably is not so well constructed as that in the US. Considerable progress has been made in the production of equipment since 1950, however, and new types of combines especially designed for use in very thick or very thin coal seams are being produced. Also, in recent years large hydromonitors (a type of high-pressure water hose) have been introduced for working steeply pitched coal seams, which are difficult to work by conventional methods. For strip mining, power shovels and draglines now in production are much larger than those made previously. In 1950, practically all of the output consisted of models with bucket capacities under 7 cubic meters. In 1955 the USSR began to produce units of 20 cubic meters, and it plans to produce units of 25 cubic meters during 1956-60.



S-E-C-R-E-T

#### 4. Chemicals.

Soviet technology in the production of chemicals does not appear to have progressed significantly since 1950 and, on the whole, lags substantially behind average US practice. The principal lagging area is in the production of petrochemicals, where the range of products is extremely limited compared with US production. There is no evidence of large-scale thermal cracking, chlorination, or nitration of the lighter hydrocarbons as is practiced in the US for the production from petroleum of synthetic rubber, synthetic ammonia, fibers, plastics, alcohols, solvents, and other commodities. Synthetic rubber in the USSR is produced mainly from alcohol, which at the present time is derived primarily from sorely needed potatoes and grain.

Another area of Soviet technological lag is in the conversion from batch to continuous processing. Batch processing is, in most cases, an obsolescent technique; continuous processing is generally more economical and yields products of higher quality. Progress in this field has been retarded by a lack of automatic control and measuring instruments, by a shortage of materials-handling equipment, and, to some extent, by a lack of engineering experience.

During 1956-60 the USSR will undertake an ambitious expansion of the petrochemicals industry which will serve as a base for increasing the production of synthetic alcohol by 10 times and of synthetic rubber by 2.2 times. It is also planned to "begin the complex automation of shops and enterprises, primarily of enterprises producing sulfuric acid, nitric acid, and soda ash; and to build and put into operation an automated shop producing sulfuric acid."

#### 5. Ferrous Metals.

Not only does the USSR have the second largest steel industry in the world, but the level of its technology and productivity is comparable to the most advanced found anywhere in the world. The level of technology between enterprises of the Soviet steel industry and within individual plants themselves, however, varies more widely than in the US. The following discussion, therefore, analyzes comparative US-Soviet technology in terms of the principal operating divisions of a steel plant: blast furnaces, steelmaking, and rolling and finishing.

- 39 -

S-E-C-R-E-T

S-E-C-R-E-T

a. Blast Furnaces.

The productivity and technology associated with the production of pig iron at Magnitogorsk and several other Soviet plants is unsurpassed even by the most efficient US plants. Labor productivity of the Magnitogorsk units, however, is about 3.5 times the average for all Soviet blast furnaces. It is estimated that the level of technology in use in the Soviet blast furnace industry as a whole is somewhat below the average in US industry.

b. Steelmaking.

The USSR has expended a great deal of effort in raising the efficiency and production rate of open-hearth furnaces, particularly at Magnitogorsk and Stalinsk, and has reached a point at which operations are equal to the best in US practice. But labor productivity at Magnitogorsk is twice the average for all Soviet steelmaking, whereas in the US the differential between best and average productivity is substantially narrower.

c. Rolling and Finishing.

The application of advanced technology to raise the productivity of rolling and finishing operations has lagged badly behind other divisions of the steel industry. A number of newer types of rolling and finishing equipment have never been built in the USSR, and other types are outmoded. Although annual production plans are met, the level of productivity and technical achievement is at best no higher than in the Western European steel industries, and advances in rolling mill technology since 1950 have not kept pace with advances in iron and steelmaking. By 1960, however, the lag in this sector of steel plant should be considerably reduced.

6. Metalworking Machinery.

Soviet ability to design and build metalworking machinery is believed to be comparable to that of the US. Soviet technical journals, exploitation of Soviet manufactured machines, and observations of machines at trade fairs show:

a. That the USSR is currently building many models of hydraulic- and electronic-controlled machines equivalent to the latest US types;

S-E-C-R-E-T

b. That photoelectric-controlled machines have been under development during the past 5 years;

c. That research on and application of high-speed cutting operations with ceramic tools are further advanced in the USSR than in the US; and

d. That the USSR has little practical experience in the building of heavy forging presses, although the development of a heavy press program is estimated to be within Soviet capabilities.

With respect to machine tool utilization the USSR, in comparison with the US, enjoys the advantage of greater standardization of end products which allows more efficient use of a given number of machine tools. Offsetting disadvantages arise from poorer plant layout and less advanced techniques for the handling of materials than those employed in the US.

F. Transport.

During the Fifth Five Year Plan the total ton-kilometers of products hauled by rail were originally scheduled to increase considerably less than industrial production because of a planned reduction in the average length of haul. Table 9\* shows a comparison between the indexes of ton-kilometers and of industrial production in 1951-55 and 1956-60. Instead, the average rail haul rose from 722 kilometers (km) in 1950 to 813 km in 1955. A considerable overfulfillment of the ton-kilometer target was therefore required, especially since the industrial production goal was itself overfulfilled. In the Sixth Five Year Plan the increases planned for industrial production and ton-kilometers are much closer together, indicating that Soviet planners have benefited from 1951-55 experience and are acknowledging that efforts to reduce the average length of haul probably will meet with little success.

A transport objective which will prove extremely difficult to attain is the plan for putting a greater share of total ton-kilometers on nonrail carriers. By 1960 it is planned to decrease the rail share of total ton-kilometers to 80.6 percent compared with 85.3 percent in 1955. A number of environmental factors pose great difficulties

\* Table 9 follows on p. 42.

S-E-C-R-E-T

Table 9

Indexes of Ton-Kilometers and Industrial Production  
in the USSR  
1951-55 and 1956-60

	<u>1951-55 (1950 = 100)</u>	<u>1956-60 (1955 = 100)</u>
	<u>Plan</u>	<u>Estimated Actual</u>
Total ton-kilometers a/	145-150	165
Industrial production	170	176
		<u>Plan</u>
		155
		165

a. Includes rail, maritime, inland water, highway, air, and pipe-line transport (except of natural gas).

for this planned shift. Most inland waterways are frozen from 3 to 9 months of the year, and, because of the lack of highways and equipment, there is little possibility of increasing intercity truck traffic significantly. Thus it is probable that, repeating past experience, the railroads will again overfulfill their plan to compensate for underfulfillments by other carriers.

The investment program for transport during 1956-60 will be aimed chiefly at modernization of the railroads. One major feature of this program will be the acquisition of electric and diesel-electric locomotives on a scale that will increase total ton-kilometers performed by this type of traction from 14 percent of total rail haulage in 1955 to about 40 percent in 1960. This development will afford substantial operating economies and ease the strain on the coal supply.

The plan for expanding the rail network calls for the completion of approximately 6,500 km of new lines -- twice as much as in 1951-55. About 1,200 km were constructed during the Fifth Five Year Plan. Most of these new lines will be constructed east of the Urals. In addition to the planned new lines expansion, about 900 km of narrow- and broad-gauge lines are to be built in the "new lands."

- 42 -

S-E-C-R-E-T

S-E-C-R-E-T

Of major importance will be the completion of lines from Magnitogorsk to Abdulino and from Stalinsk to Abakan. These lines will join existing lines to form a parallel route south of the Trans-Siberian Railroad running from Abdulino to Abakan, thus lessening the heavy load on the existing network and providing a short-line connection between Magnitogorsk and the coal-mining and steel-producing centers of the Kuznets Basin.

- 43 -

S-E-C-R-E-T

S-E-C-R-E-T

IV. Agricultural Production and Policies.

A. Performance in 1955 and Estimated Production in 1956-61.

Soviet agriculture in 1955 has shown the first significant response to the new program for increasing output. As in the past, however, progress was spotty and gains in some areas were offset by declines in others. Party leaders did not claim at the XXth Party Congress to have solved the agricultural problem, but initial progress was judged to be promising enough to project existing policies into the new Five Year Plan without major modifications. The achievement of official goals remains impossible, but estimated increases will provide moderate gains in per capita consumption.\*

Production of grain, which is the basis of Soviet agriculture, has now increased to a point where the USSR can feel more secure from famine and have an opportunity to raise the quality of the diet. This has been achieved through acreage expansion rather than higher yields. Yields in some regions were adversely affected by weather both in 1954 and 1955. In 1954, extremely favorable conditions in the "new lands" compensated for drought in the Ukraine, and in 1955, insufficient rainfall in the "new lands" was offset by the gains from an excellent harvest in the European USSR. The net result in 1955 was continued low yield (the average rose slightly, from 7.7 to 7.9 centners per hectare), which, combined with a 13-percent increase in acreage, produced an increase in the grain harvest from 87 million to 100 million tons, most of the increase being in corn for fodder.\*\*

Within these over-all results, important changes were caused by the impact of the corn program inaugurated in the 1955 season. Acreage of bread grains (wheat and rye) continued to grow, and production rose from 55 million to 61 million tons, but the sown area of coarse grains (chiefly oats and barley, excluding corn) as well as grasses declined to make room for the planting of corn, which rose by four times -- to 18 million hectares. Production of coarse grains accordingly fell from

\* See V, p. 55, below.

\*\* Of this increase of 13 million tons, 10 million tons were in corn. A large share of the corn harvest was collected before full maturity for silage and has been statistically converted to grain. The increase, therefore, represents an improvement in fodder supplies for the live-stock program rather than a gain in availability for seed, industrial uses, export, or flour production.

S-E-C-R-E-T

28 million to 25 million tons, whereas a 260-percent increase in production of corn was reported. Such a gain, when applied to estimated 1954 production, gives a production increase from nearly 4 million tons of corn in 1954 to about 14 million tons in 1955.

The "new lands" and corn programs are closely linked. To a considerable extent the expansion of small grains (all grains but corn) in eastern areas is designed to permit the displacement of similar crops by corn in the older agricultural regions. In combination, the projects seek to produce enough bread grains for national consumption, reserves, and the export of cereal products and, simultaneously, to support the larger livestock numbers needed for rapid improvement of the Soviet diet. Corn has been enthusiastically adopted as the means to the latter end. The Soviet leadership expects corn to support larger numbers of cattle, swine, sheep, and goats and, in addition, to raise sharply the output of products per animal.

The results in the livestock sector of the corn scheme had little opportunity to take effect in 1955. In the 12 months preceding the census of 1 October 1955, the total numbers of cattle increased by only 3 percent, of cows by 6 percent, of swine by 2 percent, and of sheep by 6 percent. Improved fodder supplies contributed to a 16-percent gain in total production of milk, but production of meat increased hardly at all, and all the gains in animal products remained far below the rates necessary to meet the Sixth Five Year Plan targets.

Table 10\* shows the estimated production of selected agricultural commodities in 1950, 1955, 1960, and 1961, but the estimates are less reliable than those made for industrial production. The 15-percent increase predicted for production of grain in the Sixth Five Year Plan envisions some expansion in the sown area in East Siberia and the Far East and some reduction in the area devoted to grasses and fallow in the European USSR, but the increase is mainly dependent on higher yields. Higher yields are expected to result from several factors. Some gain in corn yields can be anticipated from the overcoming of confusion attending its rapid introduction in 1955, the use of hybrid seed, further mechanization, and possibly the increased application of fertilizer. Harvesting losses in small grains should decline somewhat because of the more timely operations provided by a two-thirds increase in the park of general-purpose tractors and a spectacular increase in the combine park, which will more than double the number of combines per sown hectare between 1955 and 1960.

\* Table 10 follows on p. 47.

S-E-C-R-E-T

S-E-C-R-E-T

Table 10

Estimated Production of Selected Agricultural Commodities in the USSR  
1950, 1955, 1960, and 1961

Commodity	Production (Million Metric Tons)				Percent of Increase		
	1950	1955	1960	1961	Estimated		Planned
					1950-55	1955-60	1955-60
Bread grains	54.2	61.0	66.0	67.0	12	8	a/
Coarse grains b/	30.8	39.0	49.0	50.0	27	26	a/
Total grains	85.0	100.0	115.0	117.0	18	15	a/
Flax (scutched basis)	0.4	0.7	0.8	0.8	49	19	35
Cotton (ginned)	1.2	1.3	1.8	1.8	9	33	56
Wool (grease basis)	0.2	0.2	0.3	0.4	43	34	82
Meat (slaughter weight)	3.1	4.0	5.0	5.2	30	25	100
Milk	25.0	29.8	38.0	39.6	19	28	95
Vegetables	16.2	19.0	27.0	28.0	17	42	118

a. The grain target is not a percentage increase but an absolute figure -- 180 million tons.

b. Including corn. Although coarse grains are used to some extent for human consumption, their production is a good indicator of fodder grain availabilities.

The projected gains in production of fiber crops are based on increases in both yields and acreages, with the former playing the more important role. The doubling of the output of mineral fertilizers called for in the Sixth Five Year Plan probably will be accomplished and will be the major factor in raising flax and cotton yields.



S-E-C-R-E-T

Numbers of cows are not expected to increase significantly. The estimated increase in production of milk is based primarily on a gain in productivity per animal because of improved fodder supplies; two-thirds of the increase in production of grain is to be in coarse grains. Production of meat will increase largely because of a growth in numbers of swine, which do not compete with cattle for the limited meadow and pasture areas. Prospects for production of livestock products, it should be noted, are particularly vulnerable to political measures.

B. Problems and Policies in Agricultural Growth.

An essential element of the changes in Soviet economic policy in recent years, and the element which is proving most permanent, is the recognition that future industrial growth depends, to a much greater degree than before, on progress in agriculture. Collectivization in the early 1930's, by insuring an urban food supply in good years and bad, freed industry for over two decades from the restraints which might have been imposed by a low level of agricultural production. But the continued growth of the towns has now caught up with and exhausted the potentialities of state procurements from a stagnant or slowly growing agricultural sector. In addition, it has become important to satisfy the urban demand for consumption items of higher quality. Sufficient supplies of bread have been achieved, but at the expense of neglecting quality foods -- chiefly meat, milk, eggs, and vegetables. Development in this direction requires revisions of the crop pattern in favor of fodder grains, new investment of a different type, and increased labor inputs. The problems involved in these adjustments may be divided as follows: those imposed by limited natural resources, those resulting from past investment policies, and those arising from the institutional features of collectivized agriculture.

1. Natural Resources.

Only about 10 percent of the soil of the USSR is classified as arable, and soils, rainfall, temperature, and other climatic factors combine favorably to provide good yields without large investment in only about one-tenth of the arable area. An 18-percent increase in the sown area over the last 2 years has pushed cultivation into distinctly marginal areas, and investment requirements have risen sharply for this reason. Both the "new lands" and corn programs involve danger on this score. Experience in the "new lands" program in 1955 confirmed its hazardous nature, as the unfavorable weather characteristic of these

S-E-C-R-E-T

regions reduced the grain yield to less than half that of 1954 (when the yield in the "new lands" exceeded the national average). The 1956 yields, even with average weather, are likely to be closer to those of 1955 than those of 1954. As the sown area has expanded in the "new lands" from 3.6 million hectares in 1954 to 20 million hectares in 1955 and then to 30 million or more hectares in 1956, the quality of reclaimed soil has become progressively poorer, because the best soils were put under the plow in the first 2 years. Perhaps half of the 1956 total sowings in the "new lands" will be on land which the USSR classifies in the lowest quality category. Despite this, a larger total harvest can be expected in 1956, barring a severe summer parching, because of the increase in total acreage and the good snow cover of the past winter. Yields below the national average can be expected for the longer term, and the sown area probably will decline because of the need for fallow and the conversion of the poorest areas to pasture.

The corn expansion program, which aims at a sown area of 28 million hectares by 1960 (55 percent above 1955), is another attempt to overcome resource limitations. In practically no part of this area is sufficient moisture combined with the summer temperatures, growing season, and good soils comparable to the US corn belt. The effort to overcome these difficulties was unsuccessful in many cases in 1955, particularly in the northern and central regions, and put corn into serious competition with other crops for available supplies of labor, fertilizer, and land. Furthermore, the exceptionally favorable growing conditions in the traditional corn areas will not be repeated each year. For these reasons, it is estimated that corn sowings, after reaching the planned target of 28 million hectares, will decline by 1960 unless, as is entirely possible, the program is pushed to the point where further gains are more than offset by the sacrifices required of other crops. The final level of acreage and production, however, probably will be higher than in 1955.

2. Investment Policy.

State investment in agriculture has in the past been both insufficient and one-sided. For many years it served only to replace gradually the loss of draft power dating from the initial collectivization disasters. In large part, state investment has been directed toward small grains (through an emphasis on heavy caterpillar tractors and combines) and technical crops (by the irrigation of cotton and the allocation of most of the production of fertilizer to fiber crops and

S-E-C-R-E-T

sugar beets). Current investment policy provides for a larger total allocation to agriculture and some change in the composition of investment goods.

State agricultural investment fell absolutely in 1952 and 1953, reaching a low point of 8 percent of total state investment in 1953. <sup>13/</sup> This share rose to 12 percent in 1954 and 1955 and is to remain at that level for the Sixth Five Year Plan as a whole; the total for 1956-60 is to be twice the amount invested in 1951-55. <sup>14/</sup> Such a level of investment is within Soviet capabilities. The "new lands" program, for example, appears not to have placed a severe strain on total investment resources. The tractor park, measured in terms of horsepower, will increase by about 75 percent, and the rapid increase in the production of cultivator tractors will raise their share from 24 to 36 percent of the park. Such a shift is necessary because, in achieving relatively complete mechanization of small grains except in the postharvesting processing (which still requires large amounts of hand labor), the USSR has ignored the mechanization of row crops such as vegetables and potatoes. The smaller wheeled tractors are also needed for corn, which is planted by the checkrow method and requires intensive cultivation. Greater investments will also be devoted to repairing the results of earlier neglect in machinery repair facilities, the mechanizing of livestock operations, and MTS and state farm construction. In the collective farm sector, where the great capital needs are larger herds and more livestock shelter, investment made from the collectives' funds alone is to be nearly as large as total investment in state agriculture.

3. Organizational Measures.

Under the present program, which stresses qualitative improvement rather than further extensive development, the type of measures which the USSR terms "organizational" assumes special importance. These measures include policies which attempt to improve planning and administration, strengthen political control, introduce new production methods, raise labor efficiency, direct more peasant labor to communal tasks, and gradually realize the long-term goal of the full socialization of agriculture by means of the final elimination of private activities.

The most important of these measures during the last 3 years was the strengthening of Party membership and activity in the rural areas by the movement of Communists from the towns and by

S-E-C-R-E-T

recruitment from the local population. Rural membership in the Party has risen to over 3 million, of a total of 7.2 million. Agricultural development is now the chief task of the Communists -- Khrushchev could spare only one sentence for industry in his report on Party organizational work at the XXth Party Congress.

This reinforcement has made possible a number of other steps. Many planning decisions can now be transferred from Moscow to the local areas (although goals remain centrally determined) because of the increased political reliability of the leading collective farm and MTS personnel who will now make these decisions. The capability to inaugurate new production programs has increased; it was the Party which cajoled and drove the collective farmers of the Ukraine into replanting 2 million hectares of corn which failed to come up in the spring of 1955. And the rural Communists must bear the burden of the new campaign to reduce private plots and livestock holdings to smaller proportions or, if possible, to eliminate them entirely.

This last drive, announced in March 1956, climaxes preparations begun 3 years ago to undertake the abolition of private elements in the present mixed system of agriculture and to achieve complete socialization. <sup>15/</sup> Soviet agricultural history has been punctuated by such campaigns since the early 1930's. At that time the original design of collectivization, under which all property down to kitchenware was to be owned in common, provoked bitter peasant resistance and caused a serious drop in food production. Stalin retreated to the compromise of the collective farm, in which private holdings retained an important place in peasant subsistence,\* but he periodically attempted to complete the task of socialization, each time meeting with the same response. In his last years, agricultural production fell once again, and his successors relaxed the pressures on private farming in 1953 for the sake of maintaining total production.

From 1953 on, two complementary lines of policy developed. On the one hand, stronger incentives were offered for communal work, chiefly in the form of higher state buying prices. These prices, which had been at extremely low levels relative to other prices, have been continually juggled since 1953 in an effort to achieve more effective and precise incentives, and the process will continue. As a result,

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\* In recent years, private holdings have provided over 50 percent of peasant income. About 60 percent of the total numbers of cows in the USSR and about 30 percent of the pigs are privately owned.

S-E-C-R-E-T

state payments to agriculture have more than doubled since 1952\*, and peasant incomes from communal work have risen by a smaller but still considerable amount, although the gains were partially offset by a fall in receipts from free market sales. On the other hand, after the initial concessions to private farming in 1953, it has again come under fire, first with the regulations raising the amount of labor-time required for communal tasks and then with the campaign against the private plot and privately owned livestock. Private holdings are not to be entirely eliminated, but they will be reduced to a point where they do not compete with the collective farm for peasant labor, which, in effect, means to a point where the private holdings lose their significance in the national economy.

The sum of these measures is an attempt to replace peasant ways of life with a closer approximation of urban life so that factory methods of organization and discipline can be imposed upon agriculture. A greater role is envisioned for money wages as opposed to wages in kind, and a system of monthly advances has begun to replace the present annual lump-sum payment. The availability of skilled labor has greatly increased, both through local training and through transfers from the cities. The MTS, an outpost of urban culture in the countryside, plays a much larger role: tractor drivers are now directly employed, instead of being borrowed from collective farms on a seasonal basis, and the MTS has become the local center for planning, production, procurement, and Party activities. Agronomists and zootechnicians have been assigned to membership in the collective farms, where they will preempt a large share of the communal income. Even the building of consolidated collective farm settlements, the so-called agrorods -- a project which was publicly repudiated when Khrushchev advocated it in 1951 -- has been revived and may be scheduled for implementation in the near future.

The results to be expected from these policies are difficult to foresee, and the estimates should be treated with caution. Higher investment priorities are certainly long overdue and should produce positive results. The "new lands" and corn schemes are more dubious, and their real value may be lost if they are pushed to the extremes now planned for them. Those organizational measures concerned with management (such as local planning and better personnel), have much merit, which may, however, be sacrificed to overambitious goals. The relation

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\* In 1952, state payments to collective farms and farmers amounted to only 20 billion rubles; in contrast, wage payments to state employees exceeded 360 billion rubles.

S-E-C-R-E-T

S-E-C-R-E-T

of the peasant to the Party and the state remains the greatest unknown, and the production estimates ignore this factor, as it might operate in either direction. Undoubtedly, full-hearted cooperation of the peasant in communal production would mark a most important step forward, and the incentive measures directed to this end are a much-needed improvement over Stalin's methods of pure force. But coercion plays a role in the present campaign as well, and Soviet history does not support the likelihood that agricultural labor can be disciplined as completely as industrial labor.

- 53 -

S-E-C-R-E-T

S-E-C-R-E-T

V. Soviet Consumption and the Standard of Living.

Soviet consumption of goods and services increased substantially during the Fifth Five Year Plan, although at a somewhat slower rate than the growth of GNP. This increase has been reflected in an improved standard of living which, though low by Western standards, is rising rapidly enough to forestall significant dissatisfaction with the pattern of material allocations made by the leadership. The present Soviet standard of living is sufficiently high to make a serious impression upon the peoples of the underdeveloped areas of Asia, the Middle East, and Africa. Since the death of Stalin, the relative trends of urban and rural standards of living have been reversed, with rural material well-being improving at a somewhat more rapid rate than urban. All these trends are expected to persist during the Sixth Five Year Plan.

A. Role of Consumption in the Economy.

Under most conditions, in contemporary capitalist economies, consumption is considered to be the ultimate goal of economic activity. Thus the standard of living (per capita consumption) is deemed to be a valid index of the effectiveness of the functioning of the economy. The standard of living is then used to make intertemporal and international economic comparisons, however crude. Present Soviet international and intertemporal comparisons, however, most often are made in terms of growth rates, usually industrial, which suggests the marked difference from US attitudes of the operational Soviet attitudes toward consumption.

In the USSR the level of consumption, like all other national economic categories or variables, is centrally planned to promote rapid industrial growth. Investment decisions and considerations tend to dominate economic thinking. Maximizing consumption may be an ideal for the remote communist future, but the immediate problem for the socialist present is defined in terms of rapidly catching up with the per capita production of leading capitalist countries, especially the US.

Soviet planners probably consider current consumption to be a mounting "cost" more or less grudgingly paid to achieve the labor productivity increases considered necessary. Or, as Khrushchev stated at the XXth Party Congress, "it is of paramount importance to ... make full use of this powerful lever, material interest, for increasing labor productivity."

- 55 -

S-E-C-R-E-T

S-E-C-R-E-T

Another factor has become potentially significant in this context during the past year. In the past, behind the insulation of the Iron Curtain, intertemporal comparisons clearly dominated popular Soviet judgments of their own material well-being. Through the recently increased cultural intercourse with advanced Western countries, however, especially by exposure of increasing numbers of Soviet citizens to consumer-oriented economies, higher consumption ideals and international comparisons may replace the present popular standards by which the adequacy of consumption is judged. In the future this factor could create pressures for greater planned allocations to consumption in order to preserve worker satisfaction.

B. Aggregate Consumption.

Aggregate consumption in the USSR increased over the entire period under consideration. According to estimates, the increase during the Fifth Five Year Plan was about 37 percent; for the Sixth Five Year Plan a 34-percent increase is currently anticipated. This steady increase, however, has been at a somewhat slower rate than the increase in GNP. The proportion of GNP allocated to consumption thus trends slightly downward for this period. These relationships probably will persist at least through the Sixth Five Year Plan. Table 11 shows consumption related to GNP for 1948, 1950, and 1955.

Table 11

Soviet Consumption Related to Gross National Product  
1948, 1950, and 1955

<u>Billion 1953 Rubles</u>			
<u>Year</u>	<u>Consumption</u>	<u>GNP Allocated</u>	<u>Consumption as Percent of Allocated GNP</u>
1948	426.8	670.9	63.6
1950	511.8	824.8	62.0
1955	706.3	1,158.9	60.9



S-E-C-R-E-T

Aggregate consumption is broadly divided into two major types of purchase or allocation -- goods and services -- each of which is discussed below. Such a division is relevant because of the Soviet tendency to "tax" goods furnished the population while at the same time "subsidizing" services furnished them. Taxation of goods occurs either through siphoning off producer enterprises' high profits or by means of direct turnover tax on the commodity. Subsidization of services is achieved by providing them gratis or through charging low rentals and fees, sometimes too low to cover even their direct costs. Indexes of consumption for selected years, 1948-61, are shown in Table 12.

Table 12

Soviet Consumption Indexes  
Selected Years, 1948-61

1955 = 100						
<u>Category</u>	<u>1948</u>	<u>1950</u>	<u>1953</u>	<u>1955</u>	<u>1960</u>	<u>1961</u>
Food	67	77	90	100	129	135
Nonfood consumer goods	44	59	84	100	146	156
Total goods	60	72	89	100	137	144
Housing and utilities	73	81	92	100	142	154
Transport and communi- cations	54	65	83	100	128	134
Total services	66	76	89	100	127	132
Aggregate consumption	61	72	88	100	135	142

C. Trends in the Consumption of Goods.

Total consumption of goods increases more rapidly than the aggregate of consumption for the period under consideration. Nonfood consumer goods increase the most rapidly of all consumption categories, more than doubling during the Fifth Five Year Plan. Food products increase more slowly and show considerable fluctuation. Food,

S-E-C-R-E-T

significantly, is the most heavily weighted category. The weight for food indicates the importance of agricultural policies in increasing consumption availabilities. The implicit weights of consumption categories for 1955 are as follows: food, 54; nonfood consumer goods, 22; and services, 24.

D. Trends in the Consumption of Services.

The consumption of services increases somewhat less rapidly than aggregate consumption. The plan for transport and communications in the Sixth Five Year Plan provides for a more rapid rate of growth than that achieved during the period of the Fifth Five Year Plan, but housing and utilities are to increase at a slower rate. Medical services lag.

E. Significance of the Standard of Living (Per Capita Consumption).

To the extent that the individual's material well-being may influence his functioning as an element of his economy, the standard of living is a significant indicator of the vulnerabilities and capabilities of that economy. And, under conditions of central planning, it reflects the intentions of the planners. Individual judgments of material well-being probably are everywhere influenced by the individual experiences of consumers. Thus intertemporal comparisons loom large in the analysis of the standard of living.

Fortunately, these intertemporal comparisons are conceptually the simplest. But even in intertemporal comparisons the validity of results from per capita consumption statistics, of course, depends on a number of factors. For example, although a population is never homogeneous as is implicitly assumed in any per capita analysis, in comparisons of adjacent time periods only revolutionary shifts in composition or distribution distort data beyond usefulness. Over longer intervals of comparison, however, distortions may easily arise from migrations, shifting income distributions, technical innovations, shifting consumer tastes, shifting distributive institutions, and so on.

F. Evaluation of the Standard of Living.

Significant general improvement in nearly all phases of Soviet consumption marks the trend in standards of living shown in Table 13.\*

\* Table 13 follows on p. 59.

S-E-C-R-E-T

Table 13

Indexes of Soviet Population, Aggregate Consumption,  
and Per Capita Consumption  
Selected Years, 1950-61

1955 = 100							
Item	1950	1953	1954	1955	1956	1960	1961
Population	92	97	98	100	102	109	111
Aggregate consumption a/ Per capita consumption	79	92	99	100	107	135	142
Food	84	93	100	100	105	122	126
Nonfood consumer goods	64	87	96	100	108	138	146
Total goods	78	92	99	100	106	129	134
Housing and utilities	88	95	96	100	105	134	144
Transport and communications	71	86	98	100	104	121	125
Total services	82	92	98	100	104	120	123
Per capita aggregate consumption	79	92	99	100	106	128	132

a. When this index is used for purposes of moving GNP by end use, it is adjusted to account for changes in relative prices between 1950-55 and 1955-60.

Even though the standard of living is increasing less rapidly than industrial output the increase probably is of sufficient magnitude to assure satisfaction by individuals.

Assuming the validity of the table, the average Soviet citizen probably considers 1955 to have been a year of very modest gain, especially in comparison with the 1954 gains. He perhaps noticed that,

S-E-C-R-E-T

though his housing improved more than he may have expected it to, the increase in services lagged and food did not increase at all. The increase in per capita consumption of nonfood consumer goods was less than half that of the previous year. All in all, the lot of the consumer during 1955 was not improved significantly.

Increases in the over-all standard of living in the USSR during the period 1950-55 appear to be significantly larger than the annual rates of increase for the same period in the US, computed by applying a simple total population index to an aggregate consumption index. In stressing comparisons of growth rates, it would be a mistake, however, not to draw attention to the fact that the absolute magnitude of the Soviet standard of living is much below that of the US. The Soviet standard of living will not match that of the US for some time even if the present high rates of growth can be maintained. On the other hand, the current Soviet standard of living is sufficiently above those of the Orient, Middle East, and Africa, generally, to impress any economically backward and naive peoples from these areas who may visit the USSR and have not visited the US. A comparison of indexes of the standards of living in the US and USSR in 1948-55 is shown in Table 14.\*

G. Distribution of Income.

Available data on urban and rural incomes are insufficient for detailed quantitative treatment. It is possible, however, in a general way to describe and analyze the general movements since 1948.

From 1948 at least, until the death of Stalin, urban incomes probably remained fairly steady, perhaps with a moderate rise. For the same period, however, rural incomes probably showed a significant relative decline because of higher taxes and procurements which were an increasing percent of total agricultural output.

After the death of Stalin, these trends shifted. Urban incomes continued steady, with a probable slight increase, but the trend of rural incomes shifted significantly upward, principally because of the higher state procurement and purchasing prices for agricultural products coupled with fairly good crop years. Thus, since the death of Stalin, rural incomes have significantly increased relative to urban income trends.

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\* Table 14 follows on p. 61.

S-E-C-R-E-T

Table 14

Indexes of Standards of Living in the US and the USSR  
1948-55

1955 = 100		
<u>Year</u>	<u>USSR</u>	<u>US a/</u>
1948	70	88
1949	75	89
1950	79	93
1951	83	92
1952	87	93
1953	92	96
1954	99	96
1955	100	100

a. US figures computed from data in January 1956.  
Economic Report of the President, Consumption and  
Population series.

Besides this attempt to bolster lagging agricultural production by increasing the economic incentives of the peasants, the Soviet leaders have in another way indicated concern with income distribution. This is clear from the importance attached to Kaganovich's committee on labor and wages, which, since last year, has been reviewing the entire Soviet wage structure. The committee's aim is to bring income distribution and remuneration in line with current Soviet economic policy goals (and closer to popular concepts of equitableness) and thus to permit more effective planning and control of enterprise labor costs and personal incomes.

H. Real Wages and Incomes.

The concept of "real" wages and incomes includes a consideration of the magnitude of nominal current wages and incomes and their adjustment by appropriate price indexes. Khrushchev stated to the XXth Party Congress that during the Fifth Five Year Plan a 39-percent increase had occurred in the real wages of workers and employees and a 50-percent

S-E-C-R-E-T

increase in the real revenues of collective farmers. Bulganin declared at the Party Congress that during this period retail prices had declined 26 percent.

During the period from 1948 until Stalin's death, urban real incomes were enhanced substantially by annual price reductions on consumer goods. These reductions, of course, had an effect also on rural real incomes -- but only a minor effect. The price decreases of 1953 and 1954, in the light of increased goods availabilities in the countryside, benefited the rural population in a more substantial way than previous price decreases, and at a time when rural monetary income was increasing. The avoidance of a general consumer-goods price decrease in 1955, occurring as it did during a period of relatively rising rural incomes, continued to narrow the margin between urban and rural real incomes significantly.

Khrushchev also cited the more modest goals of the Sixth Five Year Plan -- a 30-percent increase of workers' and employees' real wages and about a 40-percent increase in real revenues of the collective farmers. The leadership has apparently estimated that the lag of rural incomes behind urban incomes and the wide difference between rural and urban consumption patterns must be further reduced. Measures to raise the role of money in agricultural incomes instituted since the XXth Party Congress, as well as statements that future price decreases of consumer goods would result only from labor productivity increases, point to implementation of such a policy during the Sixth Five Year Plan.

In his speech, Khrushchev stressed the need to overcome rural backwardness. Increased rural real income is apparently seen as a means to this end. The promised reduction in the workweek suggests that the urban worker will receive increased leisure during the Sixth Five Year Plan, perhaps at the expense of income gains.

S-E-C-R-E-T

## VI. Soviet Foreign Economic Relations.

### A. General.

The most significant development in Soviet foreign economic relations in 1955 was the growth and development of a Soviet credit program in the Free World, specifically in underdeveloped countries. Although the program is modest at present, the growing industrial capabilities of the USSR and its own increasing demand for foodstuffs and raw materials indicate that it is now to the economic as well as the political and strategic advantage of the USSR to trade increasingly with underdeveloped countries. The credit program does not yet appear in trade data, but an increase in the export of manufactured goods relative to imports is indicative of growing Soviet capabilities to export capital goods. Changes in the over-all direction and composition of Soviet trade show no startling developments other than the emergence, for the first time, of an excess of exports over imports. Soviet foreign trade for 1948-55 is shown in Table 15.\*

### B. Soviet - European Satellite Trade.

Soviet trade with the European Satellites in 1954 and 1955 continued to reflect increasing trade ties between the USSR and these Eastern European countries. Total trade turnover increased about 18 percent in 1954 over 1953 but declined in 1955 to the 1953 level of nearly \$3 billion -- an amount about twice the value of Soviet - Free World trade. Soviet trade with the Satellites represents about half of total Soviet trade turnover, a percentage which has remained relatively stable since about 1948.

The principal trading partners of the USSR among the European Satellites are East Germany, Czechoslovakia, and Poland, which collectively represent about 70 percent of total Soviet trade. Virtually all of the remainder is with Rumania, Bulgaria, and Hungary, as Albanian trade is negligible.

Little is known of the magnitudes or of the commodity composition of imports and exports of the USSR with each Satellite. The more industrialized northern Satellites (East Germany, Czechoslovakia, and\*\*

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\* Table 15 follows on p. 64.

\*\* Continued on p. 66.

S-E-C-R-E-T

Table 15  
Foreign Trade of the USSR a/  
1948-55

Billion Current US \$						
Year	Total	Free World	Total Sino-Soviet Bloc	Communist China	Asiatic Satellites	European Satellites
1948	<u>2.550</u> <u>b/</u>	1.250 <u>c/</u>	<u>1.300</u>	0.006 <u>d/</u>	0.061 <u>e/ f/</u>	1.233
1949	<u>2.658</u> <u>g/</u>	0.886 <u>g/</u>	<u>1.772</u> <u>g/</u>	0.027 <u>h/</u>	0.084 <u>e/ f/</u>	1.661
1950	<u>3.250</u> <u>i/</u>	0.600	<u>2.650</u> <u>i/</u>	0.255 <u>j/</u>	0.171 <u>e/ f/</u>	2.224
1951	<u>4.500</u> <u>k/</u>	1.075	<u>3.425</u> <u>l/</u>	0.765 <u>m/</u>	N.A.	2.660
1952	<u>5.225</u> <u>k/</u>	1.050	<u>4.175</u> <u>l/</u>	1.515 <u>n/ o/</u>	N.A.	2.660
1953	<u>5.750</u> <u>k/</u>	1.000 <u>p/</u>	<u>4.750</u>	1.850 <u>o/ q/</u>	N.A.	2.900
1954	<u>6.250</u> <u>r/</u>	1.350 <u>p/</u>	<u>4.900</u>	1.330 <u>o/ s/</u>	0.150 <u>e/ t/</u>	3.420
1955	<u>6.288</u>	1.413 <u>u/</u>	<u>4.875</u> <u>i/</u>	1,850 <u>o/ v/</u>	0.165 <u>t/ w/</u>	2.860

a. These figures are based on Communist statements and publications. Where rubles were given, the official rate of four rubles per dollar was used for conversion.

b. 16/

c. 17/



S-E-C-R-E-T

Table 15

Foreign Trade of the USSR  
1948-55  
(Continued)

- 
- d. 18/  
e. 19/  
f. North Korea only.  
g. 20/. Based, in addition, on a Soviet statement that two-thirds of the Soviet trade was with Soviet Bloc countries.  
h. 21/  
i. 22/  
j. 23/  
k. 24/  
l. 25/  
m. 26/  
n. 27/  
o. The 1952 and 1953 figures probably include an unknown value of military goods received by Communist China under some type of loan or lease arrangement. The 1954 and 1955 figures exclude such transactions which are estimated to have been about US \$500 million and US \$550 million in the respective years.  
p. 28/  
q. 29/  
r. 30/  
s. 31/  
t. North Korea and North Vietnam.  
u. Estimated from official statistics prepared by the Department of Commerce.  
v. 32/  
w. 33/

S-E-C-R-E-T

S-E-C-R-E-T

Poland) sell machinery, transport equipment, and in some instances raw materials (such as uranium from East Germany and Czechoslovakia). In return these Satellites obtain raw materials as well as some equipment. The USSR ships mostly industrial products and imports food products and raw materials from the other European Satellites.

Although trade on current account between the USSR and its European Satellites has been brisk in the postwar period, there has also been considerable credit extension by the USSR to finance capital imports from the USSR and some Free World countries. Credit of about \$1.4 billion for economic development was provided by the USSR between 1946 and 1955. These bilateral agreements specified repayment by means of commodity shipments over a period of years. Poland, the chief recipient, received slightly less than 50 percent, and East Germany about 25 percent, of the credits. In addition, credit of about \$2 billion has been extended to the Satellites for the repurchase of assets acquired by the USSR in the occupation.

The countries of the Soviet Bloc will intensify the degree of mutual coordination of planning for production, investment, and trade during the next 5 years. There will be increased division of labor among the countries, each specializing in those items which it can best produce, although each will emphasize expansion of heavy industry. As a result of increased specialization of production and increased orientation toward the Soviet economy, the exchange of goods among the countries of the Soviet Bloc may be expected to increase.

C. Soviet - Communist Far East Trade.

Trade turnover between the USSR and Communist China doubled between 1951 and 1952 and increased by more than 20 percent in 1953. In 1954, trade declined substantially, but in 1955 it was again at the 1953 level of nearly \$2 billion. At present, China is the largest single Soviet trading partner. Soviet-Chinese trade is about 65 percent of the Soviet - European Satellite trade and is 30 percent greater than the volume of Soviet trade with the Free World. Nearly half of total Chinese trade is with the USSR. Trade between the USSR and North Korea and North Vietnam has been relatively small.

Since 1953, Soviet credits have played a significant role in the economic development of Communist China. Soviet credit has financed a steady stream of capital goods and provided China with technicians and planners who are heavily involved in China's industrialization program.

- 66 -

S-E-C-R-E-T

S-E-C-R-E-T

The principal Chinese Communist imports are capital goods and military end items, both being items which China has a limited capability to produce. Chinese exports are principally raw materials, of which food is the most important.

Soviet trade with Communist China is and will continue to be an essential ingredient of the Chinese industrialization program. It can be expected that the volume of trade between the USSR and China will increase without significant changes in commodity composition.

D. Soviet - Free World Trade.

The significant characteristics of Soviet trade with the Free World in 1955 were the maintenance of trade at a high level, a shift to an excess of exports over imports, an increase in exports of manufactured goods, and a slight decline in the relative importance of food among both imports and exports. The proportion of total Soviet trade going to the Free World increased slightly in 1955 but remained at only 22 percent of the total. Soviet trade with the Free World for 1952-55 is shown in Table 16.\*

In 1955 the USSR for the first time had an excess of exports over imports in its trade with the Free World. The surplus arose as a result of almost no change in exports, whereas imports declined slightly less than 15 percent in 1955 compared with 1954.

The direction of Soviet trade in the Free World changed substantially in 1955. Exports to other European countries, the Near East and Africa, and Latin America declined. The major increase went to Western European (OEEC) countries. Similarly, imports from Western Europe (OEEC) decreased by 7 percent, whereas total imports went down 12 percent. Soviet imports from Western European countries not in OEEC experienced a sharp decrease. The USSR maintained imports from Latin America at about the 1954 level, whereas imports from Australia in 1955 were only 13 percent of the 1954 level. Soviet imports from other areas declined moderately in 1955.

The Soviet credit program is not reflected in import-export statistics, because of its relative newness and small annual magnitude. Over a longer period, however, it will influence the volume, direction, and composition of Soviet - Free World trade.

\* Table 16 follows on p. 68.

S-E-C-R-E-T

Table 16

Soviet Trade with the Free World a/  
1952-55

1951 US \$				
Area	Imports			
	1952	1953	1954	1955
US and Canada	20	20	5,722	3,200
OEEC countries	236,022	205,198	282,820	262,200
Other European countries	158,443	156,475	162,475	151,300
Near East and Africa	68,254	36,150	61,585	60,200
Far East	30,289	8,722	10,342	9,700
Oceania	25	35,560	44,495	5,800
Latin America	144	13,286	62,329	61,200
Total Soviet imports	<u>493,197</u>	<u>455,411</u>	<u>629,768</u>	<u>555,600</u>
Area	Exports			
	1952	1953	1954	1955
US and Canada	19,578	12,522	13,769	15,500
OEEC countries	308,490	262,020	363,016	375,000
Other European countries	83,246	96,394	98,290	87,000
Near East and Africa	56,663	25,860	30,795	27,600
Far East	3,205	3,422	6,930	8,600
Oceania	1,294	2,012	2,117	1,700
Latin America	68	66	40,458	38,800
Total Soviet exports	<u>472,544</u>	<u>402,296</u>	<u>555,375</u>	<u>554,200</u>

a. This table is based on and adjusted to 1951 dollars by using world unit value index data from source 34/. Turnover (imports plus exports) is not the same as given in Table 15, p. 64, above, as the price data are different.

b. Preliminary estimates based on annual rating available data as of 18 February 1956.

S-E-C-R-E-T

The commodity composition of Soviet - Free World trade in 1955 continues, in general, the trend which has been developing in recent years. The commodity composition of Soviet - Free World trade in 1952-55 is shown in Table 17. For imports the pattern is not completely clear, but manufactured goods continue to dominate, representing nearly 50 percent of Soviet imports, and raw materials represent nearly 33 percent. Through 1954 the proportion of imports and foodstuffs was increasing, reflecting the "new course" emphasis, but in 1955 the proportion dropped off, although remaining above the 1953 percentage. Specific commodity imports by the USSR indicate somewhat erratic changes. The USSR dropped out of the rubber market in 1954, but in 1955 was back in, importing about 80,000 tons. The USSR bought Australian wool in considerable quantity in 1954 but relatively little in 1955. The year 1955 saw the partial termination of the "new course" in imports; food imports, notably meat and butter, declined in 1955 compared with 1953 and 1954.

Table 17

Commodity Composition of Soviet - Free World Trade a/  
1952-55

	Percent <u>b/</u>			
<u>Imports</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>
Food	10	17	22	18
Raw materials	51	39	33	34
Manufactured goods	39	44	45	48
<u>Exports</u>				
Food	60	35	16	14
Raw materials	32	52	67	64
Manufactured goods	8	13	17	22

a. Based on US Department of Commerce data.

b. Based on 1951 dollar calculations.

S-E-C-R-E-T

A more distinct pattern emerges for exports. Food exports have been declining in relative importance, largely because of a fall in grain shipments, and the trend continued in 1955. By 1955 the proportion of food exports, which was 60 percent in 1952, had dropped to 14 percent. During the same time period the percentage of exports represented by manufactured goods nearly tripled, and the percentage represented by raw material exports doubled. The growth of Soviet raw material exports can be accounted for by a few selected commodities. Timber and wood products have risen substantially in recent years, with a 40-percent increase in 1955 over 1954. Fuels, including not only petroleum products but also coal and coal products, have also increased considerably. More than a tenfold increase in petroleum exports has taken place since 1952, and in 1955 the upward trend continued.

No conclusive evidence of a radical or permanent shift in the pattern of Soviet trade can be established at this time. It is clear, however, that the ratio of exports of manufactured goods to imports of manufactured goods is increasing. The USSR is moving toward a position of balance in trade in manufactured goods or possibly even an export balance. In 1952, imports of manufactured goods exceeded exports by five times, whereas in 1955 they were less than double the level of exports of manufactured goods.

Gold sales by the USSR were about the same in 1955 as in 1954. The use of gold to bolster balances is contingent on the continued existence of a trading deficit. Should the USSR maintain a surplus, which first emerged in 1955, gold shipments probably will cease except on a highly selective and special-purpose basis.

Soviet - Free World trade probably will continue to increase and to shift gradually in direction and composition. The USSR probably will increase its exports of manufactured goods especially and will increase its imports of raw materials and foodstuffs. Accompanying the change in commodity composition, the USSR will gradually increase the proportion of its total trade with Asian, African, and Latin American countries.

E. Sino-Soviet Bloc Credit Program in the Free World.

The Sino-Soviet Bloc, as a result of the changing structure of its component economies and in order to gain political and strategic advantage, has recently begun to expand its economic contacts with

S-E-C-R-E-T

underdeveloped countries. This expansion has taken the form of the extension of long-term capital credit and the purchase of the food and raw materials of underdeveloped countries. Because of the rapidly increasing industrial power of the USSR, it has now become possible -- and from an economic point of view advantageous -- for the USSR and other Bloc countries to export some types of capital goods and to import certain raw materials and food products.

The Sino-Soviet Bloc credit program includes technical assistance, the provision of specific items of capital equipment, and the construction of entire manufacturing plants for underdeveloped countries. Bloc offers have been made and accepted on many contracts for long-term, low-interest credits, with payments to be made in local currencies or through barter arrangements. Bloc credits have interest rates of 2 to 3 percent -- about half the Western rates -- and may be repaid over more extended periods of time. The Sino-Soviet Bloc generally is prepared to accept in payment the products of underdeveloped countries unsalable in other markets at prices satisfactory to the producing country. In Egypt and Burma the Bloc has arranged to take exportable surpluses of cotton and rice in exchange for Bloc industrial equipment and the services of Bloc technicians.

Total long-term credits extended by the Sino-Soviet Bloc to underdeveloped countries are estimated to be about \$800 million from 1954 through February 1956, 60 percent of which has been negotiated by the USSR. Credit offers under serious consideration amount to \$400 million in addition, making a total credit of more than \$1.2 billion which the Bloc is prepared to advance. Minimum known credits and possible credits to be extended by the Sino-Soviet Bloc to non-Bloc countries from 1 January 1954 to 1 April 1956 are shown in Table 18.\*

As a part of its over-all program the Sino-Soviet Bloc has exported arms to Egypt and Afghanistan and has offered arms to Syria, Saudi Arabia, and India, as well as to several Latin American countries. The USSR has a very large export potential in arms because of substantial stocks which are approaching the obsolescent stage for its own forces but which are adequate for Middle Eastern and Latin American needs.

F. Role of the USSR in the Sino-Soviet Bloc Credit Program.

The USSR has assumed the central role in the Sino-Soviet Bloc credit program. Primary responsibility for the Bloc credit program in the Middle East and Indonesia has been placed with the European Satellites,

\* Table 18 follows on p. 72.

S-E-C-R-E-T

Table 18

Minimum Known Credits and Possible Credits to Be Extended  
by the Sino-Soviet Bloc to Non-Bloc Countries a/  
1 January 1954 - 1 April 1956

Million US \$			
Recipient Areas	USSR	Bloc Excluding USSR	Total
Middle East			
Egypt	Negligible	174.7	174.7
Iran	0	1.5	1.5
Jordan	0	0.2	0.2
Syria	Negligible	14.0	14.0
Total		<u>190.4</u>	<u>190.4</u>
South and Southeast Asia			
Afghanistan	106.8	15.0	121.8
India	125.0	32.8	157.8
Indonesia	0	9.5	9.5
Total	<u>231.8</u>	<u>57.3</u>	<u>289.1</u>
Europe			
Finland	20.0	0	20.0
Iceland	0	1.6	1.6
Turkey	0	12.0	12.0
Yugoslavia	204.0	95.0	299.0
Total	<u>224.0</u>	<u>108.6</u>	<u>332.6</u>
Latin America			
Argentina	4.0	15.0	19.0
Total	<u>4.0</u>	<u>15.0</u>	<u>19.0</u>
Grand total	<u>459.8</u>	<u>371.3</u>	<u>831.1</u>

a. This table is based on hundreds of individual sources, including official statements of the USSR and other Bloc countries and of recipient countries,

50X1



S-E-C-R-E-T

but the USSR has the dominant role in Afghanistan, India, Burma, and Yugoslavia. These jurisdictions have been by no means exclusive. Furthermore, the barter arrangements under which a significant proportion of the Egyptian cotton and rice surpluses was quickly purchased by Communist China, Poland, Czechoslovakia, East Germany, Hungary, and the USSR indicate a coordinated effort. On the whole, Communist China's role has been less important.

In addition to encouraging the other Sino-Soviet Bloc countries to develop their own credit programs, the USSR has used them as intermediaries in special cases. An example of this is the Czechoslovak sale of Bloc arms to Egypt. The pre-World War II commercial experience and contacts of the European Satellites make them well suited to act as the Bloc's entering wedge in the establishment of trade relations with the Middle East. Furthermore, an increase in Middle East demands for certain categories of capital goods produced in the European Satellites appears to coincide with a decrease in Soviet demand for them. In addition to the economic considerations involved, the establishment of trade missions may serve as an intermediate step in obtaining diplomatic recognition for East Germany and Communist China.

The geographic division of labor established between the USSR and the European Satellites tends to maximize Soviet control of the Bloc credit and trade expansion effort in areas contiguous to the USSR and to minimize direct Soviet involvement in the explosive Middle East political situation.

G. Recipient Countries Under the Sino-Soviet Bloc Credit Program.

Yugoslavia has been the principal recipient under the Sino-Soviet Bloc credit program, accounting for one-third of all credit extended by the Bloc and for nearly one-half of that provided by the USSR. Egypt ranks second, receiving about one-fifth of all credits, but none from the USSR. Other important recipients are India, with about 19 percent of the credits, nearly all from the USSR, and Afghanistan, with 15 percent of total credits, principally from the USSR.

Underdeveloped countries undoubtedly regard the Sino-Soviet Bloc as a source of capital actively competing with the Free World. Economic conditions in a number of these countries are very favorable for the type of program being offered by the Bloc. Not only do these countries need large quantities of the types of capital goods and plant facilities being offered by the Bloc, but in turn the Bloc purchases commodities which other countries will not buy.

- 73 -

S-E-C-R-E-T

S-E-C-R-E-T

In addition, the provision by the Sino-Soviet Bloc of capital goods and plant facilities may greatly assist economic development in underdeveloped countries. It is not surprising that the offer of such goods, coupled with favorable credit terms, has been accepted by these underdeveloped countries. The uncertainty of Free World markets for some of the commodities exported by the underdeveloped areas is an important factor favorable to Bloc activities in these areas. Imports of Bloc capital goods and technical assistance place a part of the recipient country's industrial base on Soviet standards, which may well result in a dependence on Bloc willingness to supply replacement parts. Although the underdeveloped countries may be aware that there is a danger of Soviet influence, and possibly of Soviet dominance, the short-run gains in many instances are apparently sufficient to outweigh the economic and political dangers involved.

#### H. Economic Basis of Credit Program.

The USSR has maintained an unusually high rate of investment for a long period of time, concentrating on the construction of plants and equipment for heavy industry. In about 30 years the USSR has changed from an agriculturally oriented, industrially impotent country to the second industrial power in the world.

When the USSR was still primarily an agrarian economy in the process of rapid industrialization, the pattern of Soviet foreign trade was to export the products of the extractive industries in order to import capital goods. This pattern enabled the USSR to acquire costly capital goods which it was not equipped to produce in exchange for raw materials which it did not yet require for its industries.

The gradually changing structure of the Soviet economy is resulting in important shifts in the relative costs of producing different items in the USSR. As the USSR has expanded its plant and equipment and has gained more experience in the manufacture of capital goods, costs of production have declined. On the other hand, it is becoming more costly for the USSR to obtain the output of the mineral and agricultural sectors, as most of the low-cost output has already been exploited.

The USSR is now finding that its traditional pattern of foreign trade -- that is, the export of raw materials and foodstuffs in exchange for imports of capital goods -- is less advantageous. Reflection of this can be found in the Soviet decision not to import as much capital goods

- 74 -

S-E-C-R-E-T

S-E-C-R-E-T

as it could even under present East-West trade controls and in the increasing production of Soviet imports accounted for by food products and raw materials.

Because the shift in relative costs is still in process, the bulk of the Soviet exports of capital goods probably will be confined to the simpler types which are relatively easy to manufacture. These exports are the items which the underdeveloped countries have especially desired to import -- transport equipment, prime movers, machinery for the extractive industries, and basic and standard manufacturing facilities. Furthermore, the USSR is able to and will export technical assistance. For many years, Soviet technical and engineering training has been conducted on a large scale and has been growing at a faster pace than in the US. The USSR now has about the same number of trained personnel in applied scientific fields as the US, and its scientific educational program will continue to grow faster than in the US.

The extension of credit and technical assistance to underdeveloped countries and the expansion of trade with these areas result in a net economic gain to the USSR. As the USSR develops its industrial capacity further, resulting in increased industrial demands for basic resources and the gradual depletion of the domestic supply of these resources, it will become increasingly advantageous for the USSR to export capital goods and to import industrial raw materials. In addition, as population continues to grow, it will also become more advantageous for the USSR to import food products.

The timing of this shift in trade patterns is a fortunate historic accident for the USSR. The political and strategic implications are great, coming at a time when politically vulnerable, capital-hungry nations need the kinds of capital goods which the USSR is willing and has the capability to export and when the USSR can readily absorb their products. The probability of political gains, along with economic gains, is a situation ready-made for the present Soviet leaders to seize upon and exploit.

The policy of Soviet foreign trade is frequently characterized as a striving toward "self-sufficiency." This long-standing dogma means that the USSR does not intend to become inextricably dependent on the rest of the world for the basic supplies for its economy. The basic dogma continues to hold, but it will not prevent the USSR from making changes in the trade pattern which do not result in too great a dependence on imports.

- 75 -

S-E-C-R-E-T

S-E-C-R-E-T

The credit program of the Sino-Soviet Bloc will not impose a net economic burden on the Bloc economies. The economic gain at present is slight but will increase over a period of time. Apart from the gains, the program as it has developed so far would not impose a serious economic burden upon the Bloc economies. Credit offers of about \$1.2 billion amount to about 1 percent of annual industrial production in the Bloc. If all of these offers materialize into actual credits, which are then fully utilized, the projects undertaken will be spread over something like 5 years.

Capital resources exported to underdeveloped countries will of course be unavailable for domestic capital expansion. The construction in India during 1956-59 of a steel mill with a capacity of 1 million tons means that the USSR must forego resources which represent about 7 percent of Soviet steel expansion during that period. The export of other plants, such as electric power stations, cement plants, sugar factories, and other facilities deprives the Sino-Soviet Bloc of their use. But these exports, in total, represent only a minute fraction of what the Bloc produces annually. The magnitude of the program indicates that the impact on immediate growth in the Bloc will be very small and will not inhibit the fulfillment of plan goals.

In view of the magnitude of the total trade of the Soviet Bloc with the rest of the world and the size and present stage of development of its economies, long-term credits can be expanded considerably and trade with underdeveloped countries can be enlarged substantially with concomitant advantages to both parties.

S-E-C-R-E-T

APPENDIX A

STATISTICAL TABLES

Table 19

USSR: Indexes of Gross National Product, by Sector  
1950-56, 1960, and 1961

	1955 = 100								
	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1960</u>	<u>1961</u>
<u>Major sectors</u>									
Industry	57	65	69	78	88	100	111	165	182
Heavy industry	55	63	67	76	87	100	112	170	190
Light industry	65	74	78	86	94	100	109	147	156
Agriculture	90	77	94	91	95	100	107	123	127
Transport	61	68	74	81	89	100	110	152	164
Communications	65	71	78	84	92	100	110	154	167
Construction	71	77	83	85	95	100	109	160	176
Trade	54	65	71	81	98	100	109	150	162
Services	94	97	98	99	100	100	103	118	121
Education	86	92	90	96	98	100	104	121	123
Health	79	83	86	90	96	100	104	121	125
Housing and utilities	75	79	84	89	94	100	106	142	154

S-E-C-R-E-T

S-E-C-R-E-T

Table 19

USSR: Indexes of Gross National Product, by Sector  
1950-56, 1960, and 1961  
(Continued)

	1955 = 100								
	1950	1951	1952	1953	1954	1955	1956	1960	1961
<u>Major sectors</u>									
Services (Continued)									
Administrative services	131	130	130	117	112	100	97	99	100
Military services	92	95	97	99	100	100	102	108	109
<u>Industry</u>									
Energy	58	65	71	79	87	100	114	178	199
Electric power	53	61	69	78	88	100	114	188	214
Solid fuels	68	73	77	82	89	100	110	151	161
POL	52	59	67	75	83	100	119	202	233
Metals	57	67	76	84	91	100	111	158	167
Nonferrous	48	59	71	79	87	100	116	183	186
Ferrous	60	69	77	85	92	100	110	152	162

S-E-C-R-E-T

## S-E-C-R-E-T

Table 19

USSR: Indexes of Gross National Product, by Sector  
1950-56, 1960, and 1961  
(Continued)

	1955 = 100								
	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1960</u>	<u>1961</u>
Fabricated metals	50	57	59	69	82	100	112	180	202
Merchant shipbuilding	71	85	85	86	96	100	105	125	130
Automotive equipment	69	65	70	81	94	100	106	142	147
Tractors	72	58	62	69	84	100	120	197	203
Agricultural machinery	33	38	42	55	77	100	114	176	185
Electrical machinery	42	54	63	75	88	100	108	162	180
Electronic equipment	25	35	45	60	78	100	128	300	327
Rail equipment	96	84	60	81	88	100	119	159	163
Machine tools	60	64	68	77	87	100	120	217	253
Metalforming machinery	40	52	59	67	81	100	111	191	193
Defense	55	65	65	66	77	100	113	142	154
Chemicals	60	66	73	81	88	100	113	186	207
Construction materials	40	48	57	67	81	100	126	245	276
Forest products	81	92	95	98	108	100	106	123	128
Processed foods	77	84	88	93	95	100	106	130	134
Manufactured consumer goods	58	69	73	84	95	100	109	153	164
Consumer durables	24	34	43	51	77	100	119	228	262

S-E-C-R-E-T

Table 19

USSR: Indexes of Gross National Product, by Sector  
1950-56, 1960, and 1961  
(Continued)

	1955 = 100								
	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1960</u>	<u>1961</u>
<u>Agriculture</u>									
Food crops	90	77	94	91	95	100	107	123	126
Industrial crops	87	89	92	93	101	100	108	131	135
Total gross national product <u>a/</u>	71			88		100		140	148
Billion 1953 rubles	910			1,120		1,303		1,785	1,896

a. GNP has been estimated only for 1950, 1953, 1955, 1960, and 1961.

S-E-C-R-E-T



## S-E-C-R-E-T

Table 20

USSR: Estimates of Production of Selected Products of Heavy and Light Industry  
1950-56, 1960, and 1961

Product	Unit	1950	1951	1952	1953	1954	1955	1956	1960	1961
Heavy industry										
Energy										
Coal, hard and lignite	Million metric tons	261	282	301	320	347	391	430	593	633
Electric power	Billion kilowatt-hours	91	104	118	133	151	170	193	320	363
Petroleum products a/	Million metric tons	38	42	46	52	57	68	83	146	167
Metals										
Crude steel	Million metric tons	27	31	34	38	41	45	50	68	73
Refined copper	Thousand metric tons	302	344	396	393	413	462	508	739	746
Aluminum	Thousand metric tons	210	285	360	435	505	588	720	1,235	1,240
Fabricated metals										
Trucks	Thousand units	294	249	260	288	301	329	346	430	443
Tractors	Thousand units	109	92	98	111	135	164	197	322	332
Machine tools	Thousand units	79	82	85	88	92	105	115	200	200
Freight cars	Thousand 2-axle equivalent units	85	80	48	49	48	69	95	100	100
Electrical machinery	Million US \$ (1951)	1,000	1,300	1,500	1,800	2,100	2,400	2,600	3,900	4,320
Chemicals										
Synthetic ammonia	Thousand metric tons	520	568	620	677	714	753	853	1,408	1,596
Sulfuric acid (100-percent basis)	Thousand metric tons	2,040	2,280	2,500	2,750	3,150	3,620	4,120	6,920	7,890
Synthetic rubber	Thousand metric tons	143	172	187	211	213	238	270	520	535

a. Includes natural gas.

## S-E-C-R-E-T

Table 20

USSR: Estimates of Production of Selected Products of Heavy and Light Industry  
1950-56, 1960, and 1961  
(Continued)

Product	Unit	1950	1951	1952	1953	1954	1955	1956	1960	1961
Construction materials										
Cement	Million metric tons	10	12	14	16	19	22	26	55	63
Bricks	Billion units	10	12	14	16	19	21	24	38	41
Light industry										
Processed foods										
Flour	Million metric tons	37	40	41	39	40	41	41	44	45
Refined sugar	Thousand metric tons	2,280	2,680	2,760	3,100	2,350	3,080	3,420	4,770	5,040
Vegetable oils	Thousand metric tons	780	875	955	1,100	1,230	1,115	1,260	1,840	1,950
Consumer durables										
Television receivers, civilian	Thousand units	10	20	42	95	284	550	930	2,500	2,900
Manufactured consumer goods										
Cotton fabric	Million meters	3,900	4,800	5,000	5,300	5,590	5,904	6,200	7,270	7,500
Leather footwear	Million pairs	230	260	250	260	280	299	340	455	480

## S-E-C-R-E-T

Table 21

US and USSR: Comparison of Production of Selected Industrial Products  
1948 and 1955

Product	Unit	1948		Soviet Production as a Percent of US Production	1955		Soviet Production as a Percent of US Production
		US	USSR		US	USSR	
Energy							
Hard coal	Million metric tons	593	147	25	441	272	62
Lignite	Million metric tons	3	63	2,100	2	119	5,950
Coal, total	Million metric tons	596	210	35	443	391	88
Electric power	Billion kilowatt-hours	355	66	19	655	170	26
Petroleum, total	Trillion British thermal units	18,060	1,480	8	25,370	3,450	14
Metals							
Pig iron	Million metric tons	55	14	25	71	33	46
Crude steel	Million metric tons	80	19	24	106	45	42
Finished steel	Million metric tons	63	14	22	77	35	45
Refined copper	Thousand metric tons	1,201	229	19	1,052	462	44
Aluminum	Thousand metric tons	566	135	24	1,497	588	39
Lead	Thousand metric tons	369	61	17	440	220	50
Zinc	Thousand metric tons	771	85	11	935	247	26
Fabricated metals							
Trucks	Thousand units	1,364	174	13	1,200	326	27
Machine tools	Thousand units	60	59	98	80	105	131
Metallforming machinery	Thousand units	51 a/*	5 a/	10	58 b/	11 b/	19

\* Footnotes for Table 21 follow on p. 84.

S-E-C-R-E-T

Table 21

US and USSR: Comparison of Production of Selected Industrial Products  
1948 and 1955  
(Continued)

Product	1948			Soviet Production as a Percent of US Production	1955		Soviet Production as a Percent of US Production
	Unit	US	USSR		US	USSR	
Fabricated metals (Continued)							
Turbines	Thousand kilowatts	4,559	1,157	25	13,387	5,503	41
Generators	Thousand kilowatts	7,394 c/	1,300	18	10,514	6,300	60
Power transformers	Thousand kilovolt- amperes	24,995 c/	5,000	20	48,071	18,000	37
Chemicals							
Synthetic ammonia	Thousand metric tons	989	436	44	2,859	753	26
Sulfuric acid (100-percent basis)	Thousand metric tons	10,393	1,590	15	14,142	3,620	26
Synthetic rubber	Thousand metric tons	498	90	18	977	238	24
Manufactured consumer goods							
Cotton fabrics	Million meters	6,197	3,400	55	8,950	5,904	66
Leather footwear	Million pairs	462	140	30	577	299	52
Transport							
Rail	Billion ton-kilometers	931	468	50	905	1,002	111

a. 1950.  
b. 1954.  
c. 1947.

S-E-C-R-E-T

S-E-C-R-E-T

Table 22

USSR: Estimates of Production of Selected Food and Industrial Crops  
1938, 1950-56, 1960, and 1961

Crop	Thousand Metric Tons									
	1938	1950	1951	1952	1953	1954	1955	1956	1960	1961
Food crops										
Bread grains	52,400	54,200	51,800	59,400	53,700	55,200	61,000	65,000	66,000	67,000
Coarse and other grains (including corn)	36,200	30,800	28,200	32,600	29,300	31,800	39,000	41,000	49,000	50,000
Total grains	<u>88,600</u>	<u>85,000</u>	<u>80,000</u>	<u>92,000</u>	<u>83,000</u>	<u>87,000</u>	<u>100,000</u>	<u>106,000</u>	<u>115,000</u>	<u>117,000</u>
Potatoes	73,800	72,250	59,500	69,700	66,400	67,200	66,500	71,000	91,000	96,000
Vegetables	N.A.	16,200	14,600	16,400	16,000	17,000	19,000	21,000	27,000	28,000
Meat (slaughter weight)	3,980	3,075	2,950	3,260	3,690	3,970	4,000	4,200	5,000	5,200
Whole milk	34,100	25,000	25,500	25,250	25,750	27,000	29,750	31,400	38,000	39,650
Industrial crops										
Cotton (ginned)	730	1,210	1,270	1,280	1,310	1,430	1,320	1,430	1,750	1,800
Wool (grease basis)	130	175	190	215	230	225	250	270	335	350
Hemp fiber	120	174	174	176	178	178	180	185	205	210
Flax, scutched basis	600	450	340	375	290	380	670	700	800	820

S-E-C-R-E-T

Table 23

USSR: Estimates of Consumption of Selected Goods and Services  
1950-56, 1960, and 1961

Goods and Services	Unit	1950	1951	1952	1953	1954	1955	1956	1960	1961
Total goods consumption	Index <u>a</u> /*	72	78	83	89	97	100	107	137	144
Food consumption	Index	77	80	86	90	98	100	104	129	135
Basic food products										
Meat	Thousand metric tons	2,600	2,500	2,800	3,000	3,300	3,300	3,400	4,000	4,000
Potatoes	Million metric tons	34	26	35	36	34	33	33	36	36
Simple processed foods										
Flour	Million metric tons	37	40	41	39	40	41	41	44	45
Vegetable oils	Thousand metric tons	510	560	620	850	910	910	1,000	1,500	1,600
Complex processed foods										
Cheese	Thousand metric tons	50	60	70	80	90	110	110	140	150
Beer	Million decaliters	130	150	160	180	190	180	220	300	320
Confections	Thousand metric tons	100	1,200	1,300	1,400	1,400	1,400	1,600	2,000	2,100
Canned goods	Thousand metric tons	380	450	500	950	1,100	1,100	1,200	2,000	2,200
Nonfood consumer goods	Index	59	71	76	84	95	100	108	146	156
Clothing consumption										
Cotton fabric	Million meters	2,500	3,200	3,200	3,400	3,400	3,600	3,800	4,200	4,200
Hosiery	Million pairs	470	590	590	670	623	770	840	1,100	1,150
Knitwear	Million pieces	300	250	310	360	410	430	460	580	610

\* Footnotes for Table 23 follow on p. 87.

## S-E-C-R-E-T

Table 23

USSR: Estimates of Consumption of Selected Goods and Services  
1950-56, 1960, and 1961  
(Continued)

Goods and Services	Unit	1950	1951	1952	1953	1954	1955	1956	1960	1961
Light manufactures consumption										
Soap	Thousand metric tons	820	820	820	865	1,100	1,100	1,100	1,400	1,500
Washing machines	Thousand units	Negligible	Negligible	Negligible	4	46	87	125	528	750
Bicycles	Thousand units	650	1,200	1,600	1,900	2,400	2,900	3,100	4,200	4,500
Total services consumption	Index	76	81	85	89	96	100	105	127	132
Housing and utilities consumption	Index	81	85	88	92	95	100	106	142	154
Transport and communications consumption	Index	65	71	79	83	96	100	105	128	134
Rail passenger kilometers	Billion units	88	101	112	117	129	141	154	200	210
Aggregate Soviet consumption of goods and services	Index	73	78	83	89	97	100	107	135	142
Soviet population	Index	92	94	95	97	98	100	102	109	111
Soviet standard of living (per capita consumption)	Index	79	83	87	92	99	100	106	128	132
Soviet gross national product b/	Index	71			88		100		140	148

a. Where the unit is an index, 1955 = 100.

b. GNP has been estimated only for 1950, 1953, 1955, 1960, and 1961.

S-E-C-R-E-T

Table 24

USSR: Estimates of Production for Transport and Communications  
1950-56, 1960, and 1961

<u>Category</u>	<u>Unit</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1960</u>	<u>1961</u>
Transport										
Rail	Billion ton-kilometers	612	685	747	827	887	1,002	1,082	1,415	1,514
Inland water	Billion ton-kilometers	45	51	57	57	61	66	77	120	130
Ocean	Billion ton-kilometers	38	39	42	46	54	66	81	139	153
Motor	Billion ton-kilometers	19	23	27	32	37	42	50	85	93
Pipeline	Billion ton-kilometers	6	7	8	9	11	14	23	83	103
Communications										
Telephone revenue	Million rubles	920	994	1,066	1,148	1,208	1,278	1,400	1,864	1,935
Telegraph revenue	Million rubles	1,290	1,440	1,560	1,720	1,900	2,100	2,300	3,350	3,700

S-E-C-R-E-T



S-E-C-R-E-T

APPENDIX B

METHODOLOGY

1. Industrial Production Indexes.

On the basis of independent calculations of Soviet production indexes for the period 1951-60, it may be concluded that the official Soviet production index for 1956-60 does not significantly overstate industrial growth.

Calculations were undertaken in the following manner. For 1951-55, individual sector indexes were constructed using commodity production estimates and 1950 Soviet price weights. These sector indexes were in turn combined into indexes for heavy and light industry and for total production, using value-added weights. The indexes resulting from these calculations are shown below in comparison with Soviet official indexes.

	<u>1950 = 100</u>	
	<u>CIA Index</u>	<u>Official Soviet Index</u>
Total industry	176	185
Heavy industry	182	191
Light industry	154	176

The differences between the CIA and the official Soviet indexes probably are attributable to the following factors:

- a. A poor CIA sample of data on machinery and equipment items which may understate the growth of this sector;
- b. An undetermined amount of double counting in the Soviet index in excess of that in the CIA index which may overstate the relative importance of fast-growing industries;

- 89 -

S-E-C-R-E-T

S-E-C-R-E-T

c. The possible introduction of new products at newly established prices into the Soviet production index which CIA is unable to make allowance for; and

d. The inclusion in the CIA index for light industry of an index of home-processed foods which depresses the CIA index for light industry in relation to the official index.

Similar calculations were also carried out for the 1956-60 period, which resulted in a heavy industry index which substantially exceeded the 1956-60 official projections. This overestimate probably was caused by the use of CIA estimates for this period which are calculated in terms of 1950 Soviet prices (the latest prices available) that would tend to emphasize fast-growing industries, whereas the Soviet official index employs 1955 prices. Thus the Soviet index for 1956-60 makes allowances for price changes since 1952 (1952 prices were utilized in computing the official 1951-55 index). The official Soviet index for the entire 1951-60 period, then, is a link index and therefore possesses the desirable property of taking into account changes in the weights from 1952 to 1956.

The 1956-60 index for light industry of 147 (1955 = 100), even though calculated in 1950 prices, appeared reasonable in comparison with the 1951-55 index of 154 (1950 = 100). The official Soviet index of 170 for heavy industry for 1956-60 was therefore accepted and weighted, on the basis of value added, with the CIA light industry index of 147, yielding an industry index of 165, which was, coincidentally, the same as the official index.

2. Construction of a Ruble GNP Deflator.

The ruble-dollar conversion ratios are expressed in 1950 prices for both the US and Soviet economies. The basic Soviet GNP estimates are in terms of 1953 rubles. In order to convert the ruble GNP estimates to dollar terms, the 1953 ruble figures must be adjusted to a 1950 basis. The method used involves the construction of a price deflator for each end use. Each end-use deflator, expressed as an index with 1953 = 100, is weighted by the respective adjusted 1953 ruble magnitude to obtain an aggregate deflator for GNP.

S-E-C-R-E-T

Soviet GNP for 1953, by End Use, Expressed in 1950 Rubles

<u>End Use</u>	<u>Billion 1953 Rubles</u>	<u>Price Deflator (1953 = 100)</u>	<u>Billion 1950 Rubles</u>
Consumption	732.2	117.9	863.3
Administration	30.2	96.5	29.1
Defense	129.9	108.9	141.5
Investment	228.5	108.1	247.0
Gross national product	<u>1,120.8</u>	114.3	<u>1,280.9</u>

a. Consumption.

The consumption category contains 2 major components, commodities and services, with respective weights of 5 to 1. The commodity price deflator of 125 is based on an index of state store retail prices with an adjustment to account for the smaller price change in the collective farm market. The consumer services deflator of 91.8 is the index of money wage rates. Labor is the principal input in services.

b. Administration.

The administration grouping also contains the 2 basic components of commodities and services with respective weights of about 1 to 4.5. Commodities represent subsistence payments to internal security personnel, and services represent salaries to police and civil servants. The same component deflator used in the consumption category is employed here.

c. Investment.

The investment deflator used in this adjustment is the official deflator for state capital investment. It is obtained by comparing 1953 state capital investment in current rubles with that derived by moving 1950 investment by a volume index to 1953.

S-E-C-R-E-T

d. Defense.

The defense end use is composed of 3 elements -- troop pay, troop subsistence, and hard goods -- with respective weights of 21, 16, and 36. Pay scales are assumed to have remained unchanged over the period. The subsistence deflator is equivalent to the consumption commodity deflator. The military hard goods deflator is assumed to be equivalent to the one derived for investment.

3. Expression of Conversion Ratios in 1953 Rubles and 1955 Dollars.

The GNP ruble-dollar ratio in 1950 prices is 11.3 rubles per dollar. <sup>35/</sup> The ratio can be adjusted to a 1953 ruble basis by dividing it by 114.3, the GNP price index for 1950 calculated in 2, above.

- a.  $\frac{1950 \text{ rubles}}{1950 \text{ dollars}} = 11.3$
- b.  $\frac{1950 \text{ rubles}}{1953 \text{ rubles}} = 114.3$
- c.  $\frac{1953 \text{ rubles}}{1950 \text{ dollars}} = \frac{11.3}{114.3} = 9.84$

The official US Department of Commerce deflator for GNP between 1950 prices and 1955 prices is 112.9 (1950 = 100). If the 1953 ruble-1950 dollar ratio is divided by this index, the result is a 1953 ruble - 1950 dollar ratio of 8.72

- d.  $\frac{1955 \text{ dollars}}{1950 \text{ dollars}} = 112.9$
- e.  $\frac{1953 \text{ rubles}}{1955 \text{ dollars}} = \frac{9.84}{112.9} = 8.72$

The ruble-dollar ratios for each of the end uses are adjusted to a 1953 ruble - 1955 dollar comparison by the same procedure adopted to re-express the GNP ratio.

S-E-C-R-E-T

Expression of End-Use Conversion Ratios in 1953 Rubles and 1955 Dollars

End Use	(1)	(2)	(3)	(4) a/
	Ratio	Index	Index	Ratio
	<u>1950 rubles</u> <u>1950 dollars</u>	<u>1950 rubles</u> <u>1953 rubles</u>	<u>1955 dollars</u> <u>1950 dollars</u>	<u>1953 rubles</u> <u>1955 dollars</u>
Consumption	14.4:1	117.9	111.1	11.0:1
Administration	2.5:1	96.5	112.4	2.3:1
Defense	4.3:1	108.9	115.5	3.4:1
Investment	9.2:1	108.1	114.7	7.4:1

$$a. (4) = \frac{(1)}{(2) \times (3)}$$

4. Construction of Indexes for End Uses of GNP.

a. Consumption Index.

The consumption index is a weighted average of consumption indexes for food, nonfood consumer goods, and services, including housing and utilities and transport and communications. The basis for the commodity estimates are physical production estimates adjusted for foreign trade and inventory changes. The commodities are valued at 1955 retail prices to obtain indexes for the chief components of consumption. The housing and utilities portion of the consumer services index is an index of available urban housing space. The transport and communications indexes include passenger kilometers in rail, streetcar, bus, inland waterway and ocean traffic, and the number of telegraph and telephone messages. Other services included in the index are education, medical, and personal services. These are based, respectively, on the educational and medical budgets deflated by appropriate price indexes, and on the trend of social increase payments to the budget. The weights for each services component are the respective gross expenditures for 1955. Similarly, the services are weighted relative to commodities by 1955 gross outlays.

S-E-C-R-E-T

b. Administration Index.

The administration index is a time series of budgetary expenditures for administration and estimated outlays for internal security, deflated by a money wage index.

c. Investment Index.

The investment index consists of deflated indexes of state capital investment, collective farm investment, and capital repairs. The main exclusion is accretions to working capital. The state capital investment index is based on the 1950 current value of investment moved by the official volume index. The official index is a linked series using 1945 prices for the years 1948-50, 1950 prices for 1950-55, and 1955 prices for 1955-60. The collective farm investment index consists of current values of investment, converted to constant 1950 prices by the implicit deflator for state capital investment adjusted to account for the different composition of collective farm investment. The index of capital repairs is based on the CIA estimates of current values, deflated by the implicit state capital investment price index. The total investment index is thus computed from time series for all three types of investment expressed in 1950 prices.

d. Defense Index.

The index of defense expenditures is a weighted average of indexes of military hard goods procurement, personnel pay, personnel subsistence, operations and maintenance, and miscellaneous activities. All weights are expressed in terms of 1951 prices. The procurement index represents production of military end items, including spare parts and support equipment. The personnel pay index is based on manpower strength at 1951 pay scales for various types of military organizations. The personnel subsistence index is also a function of the manpower strength of the military establishment. It is also internally weighted by the 1951 cost of food, clothing, and personal service allowances. The operations and maintenance index is a function of the estimated stock of military equipment. The index of miscellaneous activities (transport, communications, and construction) is based on direct estimates of the movement of these items. The 1951 weights for each of the component indexes are determined by their respective gross ruble values, except for operations and maintenance, which is based on US analogy between these costs and outlays for procurement.

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